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ABSTRACT

A summary of the first 18 months of operation of the Federation of Rocky Mountain States' Educational Technology Demonstration (renamed Satellite Technology Demonstration after May 1973) details the history of the demonstration and explains the rationale for the demonstration's evaluation planning and historical analysis. The report concludes with recommendations for future social demonstration projects, noting that it is inherently difficult to achieve a workable balance among political constraints, operational constraints, social constraints, and at the same time reach the project's goals. (DGC)

ED100406

Final Report

Contract No. HEW-OS-72-155, L. M. Nelson and N. Maccoby, Principal Investigators

Nancy H. Markle
David G. Markle
Conrad G. Carlberg
Dennis R. Foote

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HISTORY AND RECOMMENDATIONS RESULTING FROM EVALUATION PLANNING FOR THE FEDERATION OF ROCKY MOUNTAIN STATES' EDUCATIONAL TECHNOLOGY DEMONSTRATION

Edited by Nancy H. Markle and David G. Markle

10 May 1974

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The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Department of Health, Education, and Welfare position or opinion.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Office of the Secretary

Abstract

Purpose: This report gives the history of approximately the first two years of the satellite telecommunications demonstration project being planned by the Federation of Rocky Mountain States in Denver, Colorado. In addition to history, the report summarizes the evaluation planning activities and provides recommendations for planning future projects.

Methodology: In carrying out the Contract and in writing this report our* roles and methods combine those of participant observer, interviewer, and researcher of documents.

Results and Conclusions: This report is prepared in five chapters. They are: I. Introduction: Participants and Setting in the Early Planning Phases; II. Rationale for Evaluation Planning, Rationale for Format and Historical Analysis; III. Narrative Chronological History; IV. History from the ETD Component Function Viewpoint; V. Analysis of the History of the Federation of Rocky Mountain States' Educational Technology Demonstration and Recommendations for Future Projects.

*Stanford University, Department of Communication Field Team.

ACKNOWLEDGEMENTS

The Stanford University, Department of Communication Field Team thanks Governor Campbell, Mr. Annison, and Mr. Ebrahimi for their efforts to cooperate with the evaluation planning contract.

We also thank the many Federal people who provided access to their project files and helpful consultation whenever it was requested.

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Preface

The purpose of this Final Report is to summarize the first eighteen months of operation of the Federation of Rocky Mountain States' Educational Technology Demonstration (renamed after May 1973: Satellite Technology Demonstration) and to provide an analysis of the events of the project that will be useful to government officials, students of public policy, and others who may be interested.

Most research is either evaluative, diagnostic, or prescriptive. Some programs involve aspects of all three. Evaluative research is the easiest to perform, and prescriptive (since it involves prediction) is the most difficult. Although the present effort deviates somewhat from the usual conception of research, we have made an attempt to combine the three of the types, evaluative, diagnostic, and prescriptive, into a meaningful whole. In doing this we have used participation, observation, and historical recording and analysis techniques. It is hoped that recommendations derived from this project will be generalizable to similar undertakings and to some of the ever more frequently occuring cooperative arrangements being developed by various levels of government and local communities on numerous projects.

Chapter I

INTRODUCTION: PARTICIPANTS AND SETTING IN THE EARLY PLANNING PHASES

Nancy H. Markle, David G. Markle, Conrad G. Carlberg

Early History

In 1971 planners in the National Aeronautics and Space Administration (NASA), the Department of Health, Education, and Welfare (HEW), and the Corporation for Public Broadcasting (CPB), were seeking organizations to carry out demonstrations using the Applied Technology Satellite-F, which would be geostationary over the Rocky Mountain area for the first year after its launch--then to be early in 1973--(71/06/02, 71/06/2A, 71/06/02B, 71/06/14A, 71/06/14B).[1]

The Federation of Rocky Mountain States was aware of potentials of satellite communications and began to discuss mutual interests with NASA and HEW (72/10/04A, 71/01/14, 72/11/16). In May of 1971, FRMS received a preplanning contract and began to work on what would be needed to plan a satellite-assisted demonstration for the delivery of social and educational services for the region (72/02/24). The services of the system were to be based on perceived needs and wants of the potential system users.

Four organizations with regional interests were to cooperate with HEW and NASA to produce the Demonstration: FRMS, the Education Commission of the States (ECS), the Western Interstate Commission for Higher Education (WICHE), and the Rocky Mountain Corporation for Public Broadcasting (RMCPB).

The Federation of Rocky Mountain States

The Federation of Rocky Mountain States is a non-profit, regionally-based organization. Its members include the governors of six states (Idaho, Montana, Utah, Wyoming, Colorado, and New Mexico), as well as many professional and educational associations, and corporations. The FRMS offices are in Denver, Colorado. The President of the Federation is a former Governor of New Mexico. The Federation engages in a number of activities intended to promote business and

1. The numbers refer to documents, by date, that were sources for information. The documents are listed in the References. For example, 71/06/02A indicates the year (1971), the month (06--June), the day (2), and that it is the "A" document in a group with that date.

industry, transportation, land use, education, performing arts, and so forth, for the six-member-state region. Such an association is potentially beneficial, because the Rocky Mountain region has a high proportion of land to inhabitants, and by sharing, or in some cases, by centralizing services, each state may derive greater benefits from existing and potential resources.

The Federation is a relatively young organization, founded in 1966. The ETD is its first large project. It seemed to the original planners of the Satellite programs that the Federation was a logical choice to centralize the satellite-related activities for the region. Originally, the Federation would guide the project and provide a small career-oriented program and utilization services. The Education Commission of the States (ECS) would, under subcontract, provide planning and management services, as well as provide content for early childhood education programming. The Western Interstate Commission for Higher Education (WICHE) would provide programming in the Higher Education field. The Corporation for Public Broadcasting would provide advice, some facilities, air time, and services. The Rocky Mountain Projects would cooperate and share ideas and some equipment with educational and social services projects in Alaska and in the Appalachian Region.

The first planning proposal was submitted in July 1971 (72/11/16). Three content areas with high national and regional priority were identified: early childhood development, career development, and higher education.

After revisions, made for the purpose of limiting the scope of the proposed activities, a planning contract was awarded on the basis of negotiations conducted in January 1972 (72/01/01. This contract (later amended to become a grant) provided $500,000 from the Office of Education.

There have been many developments since the time of that first grant. These are discussed in subsequent chapters of the present Final Report.

Education Commission of the States

The Education Commission of the States is also a relatively young organization, founded in 1965. ECS has its headquarters in Denver, but it has a broader national base than FRMS. At the time of the ETD Project, ECS claimed the governors of 42 states as members. The largest ECS project to date is the National Assessment, which it inherited from the Committee for Assessing the Progress of Education in 1971. ECS has not been involved with the ETD since May 1973.

Western Interstate Commission for Higher Education

WICHE is a non-profit agency created by 13 western states (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming). The governor of each participating state appoints 3 Commissioners to the Governing Board of the Commission. The Commission administers the Western Regional Education Compact, which is an agreement among the states to work cooperatively to improve educational programs. WICHE was formally created in 1951; program activities began in 1953. The Commission terminated its involvement with the activities of the ETD, after the funding was reduced in 1973.

Rocky Mountain Corporation for Public Broadcasting

The Rocky Mountain Corporation for Public Broadcasting is associated with the nationally-based Corporation for Public Broadcasting. As stated earlier, members of RMCPB were to provide advice, some facilities, services, and air time for the Project. However, it has been decided more recently to locate the satellite projects' uplink to the ATS-F in FRMS-operated premises in Denver and to establish a small production studio also in FRMS operated premises. As a result, the potential role of RMCPB is not as clearly defined as it might have been under other circumstances.

Related Projects

The related Alaskan and Appalachian satellite projects were somewhat slower in becoming operational than the FRMS ETD. In addition, these projects were somewhat less ambitious in initial conception than those of the FRMS ETD. Both are presently active, with some aid in engineering and equipment from FRMS.

Historical Context for the Demonstration

The present demonstration is an ongoing effort in the context of changing federal policy, with an increase in state participation and involvement in national and regional decision making. One element of this shift in national policy is an Administration effort to reduce the amount of legislation intended to achieve very specific purposes in American education (categorical grants), and to increase broader revenue sharing grants. The implementation of this shift in policy is an important part of the historical context of the Demonstration because associated federal decision making had an influence upon federal planning for the project, allocation of funds, and monitoring arrangements.

The project was funded and began operations during a period of several national debates on educational policy and the role of the federal government in education. For example, as a result of proposals presented by the Department of Health, Education, and Welfare the role of the federal government in higher education was being debated in Congress.

"Educational renewal" was also being discussed within Congress and the Administration. The basic idea was to focus federal discretionary monies on the areas of highest need in the United States, primarily rural areas and major cities.

Legislation for the National Institute of Education, which had originally been proposed several years earlier by an advisor to the President was also being considered in Congress. The Office of Education was in the process of a reorganization. The cummulative effect of these events was an atmosphere of continuous change in the formulation and administration of federal education policy in Washington.

We cannot fully interpret the effects of these events upon the Demonstration because complete documentation is not available. The project has been affected by debates on educational renewal in NIE and the Fund for Postsecondary Education, and by administrative/legislative negotiations on revenue sharing. Written public records of these negotiations are limited. There is no written record of numerous discussions concerning the Demonstration--discussions about the role of federal-state cooperation, levels of federal funding, and of negotiations between the states. Consequently, some parts of the history have been based on extrapolations from existing data and observed changes in the operation of the project.

The Stanford University Department of Communication Field Team

In May of 1972, the Office of the Secretary, Department of Health, Education, and Welfare awarded an 8 month contract, later extended to an 17 month contract ending 8 October 1973, to the Stanford University Department of Communication. The purpose of the contract was to provide an adjunct evaluation planning staff for the FRMS ETD (72/04/07) (72/05/08).

The Stanford contract called for the performance of six major tasks. These tasks were completed at the interim reporting period (8 January 1973). Two tasks (1) and (2) were also continued by the contract extension until 8 October 1973. These tasks, and their resultant documents were:

Task 1: Provide advice and guidance on evaluation to the Demonstration planners during the design of the experiment.

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Task 2: Provide an analysis of the historical record of the Demonstration planning process.

Markle, Nancy H. "General History and Analysis of the Planning Phase of the Federation of Rocky States Educational Technology Demonstration." Part IV. Interim Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. 19 January 1973.

Hall, Douglas C. "The Historical Record of the Planning Phase of the Federation of Rocky Mountain States Educational Technology Demonstration." Part VIII. Interim Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. 19 January 1973.

Task 3: Provide a statement of the educational objectives for each segment of the Early Childhood and Career Education components of the Demonstration.

FRMS ETD Career Development Component. "Objectives Prepared by the Content Components of the Educational Technology Demonstration." Part III A. Interim Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. 19 January 1973.

FRMS ETD Early Childhood Development Component. "Objectives Prepared by the Content Component of the Educational Technology Demonstration." Part III B. Interim Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. 19 January 1973.

Task 4: Provide a specific plan, including draft instruments, for documenting what was done during the Demonstration.

Foote, Dennis R. "A Draft Documentation System for the Educational Technology Demonstration." Part II. Interim Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain

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Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. 19 January 1973.

Task 5: Provide a specific plan for formative evaluation to be made during the early stages of the Demonstration, and for the introduction of improvements during its progress.

Markle, D.G. "Interim Planning for Formative Evaluation of the Educational Technology Demonstration." Part I. Interim Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain Region Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. 19 January 1973.

Task 6: Assess the problems and possibilities involved in making a summative evaluation of the Demonstration.

Markle, Nancy H. "Problems and Possibilities Involved in Making a Summative Evaluation." Part V. Interim Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain Region Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. 19 January 1973.

An additional product of the first period of contract work was a paper on a method for cost/accounting:

Markle, D.G., N.H. Markle, and Dennis R. Foote, "An Approach to Cost/Benefit Analysis, Federation of Rocky Mountain States' Educational Technology Demonstration." Used for Examples. Technical Report, Contract No. HEW-OS-72-155, Evaluation Planning for the Rocky Mountain Region Demonstration in Educational Technology, L.M. Nelson and N. Maccoby, Principal Investigators, Stanford University, Stanford, California. U.S. Department of Health, Education, and Welfare, Office of the Secretary, 6 July 1973.

As mentioned above, in January of 1973 the original contract was extended for 9 months to continue with Tasks 1 and 2 and to begin implementation of some of the recommendations in Task 5. As a result of changes in the FTD in

May 1973, both in funding and the resulting project organization and objectives, products of Tasks 3, 4, and 5 are not being implemented in the present demonstration.[2]

Background for the FRMS ETD

The rationale for an Educational Technology Demonstration was based on an analysis of numerous issues in education and technology in the late 1960s and early 1970s. One aspect of the rationale was that the cost of education has been rising, but the returns for the investment in education have not been rising proportionally.

It was argued that the Department of Health, Education, and Welfare needed better information to guide policy and resource allocation decisions, particularly in the field of education. This meant that more complete information was needed on the costs and benefits of investment in human-intensive and technology-intensive educational systems. Some of this information might be provided from the results of an experimental demonstration using frequencies allocated for social purposes on Applied Technology Satellite-F.

These issues were the basis for the creation of the Educational Technology Demonstration, even though federal, regional, and local officials perceived them differently, and with greater or less enthusiasm. Investment in human services, technical systems, and software would be measured in this Demonstration, and their effectiveness determined. The findings might, then, contribute to the improvement of public services by providing a source of information to guide future decisions.

Many innovative ideas connected with experimental educational and service delivery programs were part of the discussions about an experimental demonstration. It was natural enough for the people involved on-site to become committed to answering as many questions as possible and to providing as extensive a set of services as possible. Since federal officials saw the demonstration less broadly, this was one basis for a mismatch in expectations between federal and on-site planners that plagued the Demonstration throughout its entire preplanning, planning, and early operations periods.

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2. The reports that resulted from this contract are available upon request from: Stanford University, Department of Communication, Stanford, California 94305.

ERMS planned to design educational services that would be responsive to the recipients' needs and desires. The Demonstration was to show that non-contiguous communities of interest could be served using technology, and that public acceptance of technology would be increased. Further, this was to be done in a framework that would allow new or expanded cooperative arrangements to develop among institutions. These institutions could use information from the Demonstration for policy and program decisions.

The Educational Technology Demonstration planned to gather information about the effect of programming on participants, the cost of elements of the system, and the degree of public acceptance of the system. Such data, it was argued, could be used to make cost benefit and cost effectiveness projections for future systems that were more technology-intensive than existing systems. It was also anticipated that the project could provide the basis for advances in research and applications of engineering technology; provide information to the scientific community about how learning happens in both closed and open environments; provide a body of programs that could be used on an ongoing basis by institutions in the region; and provide information that could be applied over numerous program areas.

Once this information was assembled, existing institutions might be able to use it in making decisions about how to improve the quality of existing services, how to provide services to those who presently lacked them, and how to provide people with a wider range of program choices. These institutional decisions would lead to cooperative arrangements among agencies at all levels of government, public agencies and private agencies. Public issues could thus be addressed more effectively than had been the case up to the early 1970s.

Reasonable, relevant national legislation might then be forthcoming, allocating broadcast frequency channels for use in the public sector. New investment opportunities in the telecommunications field could be stimulated and the directions of private investment in that industry could be influenced. Eventually, there might be a substantial increase in the sharing of resources, a reduction of pressure on public funds, more effective methodologies for program development, increased productivity in social services, and economies of scale achieved from the pooling of buying power.

This set of goals, while commendable, was extraordinarily comprehensive to be accomplished by the one project. These goals were never agreed to by all of the participants either in Denver, the states, or Washington. The federal participants had considerable prior experience upon which to base their reservations. There were numerous debates on parts, or all, of this rationale throughout the early stages of the project. The result was continuing discussions of goals, objectives, operations, and funding levels for the project because participants continued to maintain incongruent expectations.

Status of the Present Report

The project is in operation at the time of this writing. Consequently, the final record is not complete. Portions of the Analysis and Recommendations that refer to the FTD are based mostly on operations up to the end of September, 1973.

Chapter II

RATIONALE FOR EVALUATION PLANNING, RATIONALE FOR FORMAT AND HISTORICAL ANALYSIS

Nancy H. Markle, Conrad G. Carlberg,
Dennis R. Foote, David G. Markle

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Approach to Evaluation Planning

The Stanford evaluation planning efforts were intended to be largely formative rather than summative in nature.[3] This section, adapted from an Appendix to an early Stanford Progress Report, describes the way that "evaluation" was viewed and approached.

Kinds and Purposes of Evaluation

The ultimate purpose of evaluation is to supply information that will aid decision-making. There are a number of kinds of evaluation, and there are uses for each.

Cronbach (1963) distinguishes between evaluation of the results of a course and evaluation for course improvement. More recently, Scriven (1967) has introduced the terms 'summative' and 'formative', which cover broader activities but correspond approximately with the kinds of purposes described by Cronbach.

A plan for the evaluation of the total effort of a project will include several kinds of evaluation. Some of these will be formative in application and some will be summative. Each kind may take place to some extent during the planning, development, and implementation phases of the project. Several kinds of evaluative purposes are given below.

Formative Purposes.

1) Evaluation of the choices among alternatives, so that both rational and data-supported progress may be made in planning, development, and implementation.

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3. This approach was not particularly successful with the FRMS ETD, since the ETD staff resisted the attempts of the "outside" team, tending to regard formative activities as "telling them what to do." For example, none of the Stanford team was invited to or allowed to be present at the weekly ETD Component Directors Meetings until the end of April 1973, after the NIE site team visit.

2) Evaluation for course improvement or user services improvement (empirical development process), which is similar in kind to (1), but which deals with products, courses, utilization systems and with persons, rather than with project processes.

Summative Purposes.

1) Evaluation of how well the planning served the development and implementation.

2) Evaluation of how well the development served the implementation.

3) Evaluation of how well the implementation served the goals and objectives of the project.

Comparison and Contrast

Evaluative information is examined both during and after the project. From it, decisions can be made both about future activities within the project itself and about directions to take and to avoid in similar future projects.

Most evaluative activities may have either formative or summative applications. Astin and Panos (1971), in their article about evaluation of educational programs, comment that, "the basic conceptual and methodological issues appear to be equally relevant to problems of 'formative' evaluation."

The distinction between 'formative' and 'summative' evaluation is more, however, than a play on words or temporal activities. There is a real difference between the two activities in purpose, and hence there is often a difference in the kind of data collected, the way in which it is collected, and the way in which it is examined. There is, for example, a contrast of purpose between collecting data to be used for statistical testing and collecting data for system development and improvement. Furthermore, data may be collected either in a formal, rigorous way, or in an informal, casual way.

Collecting Formative and Summative Data

Evidence should be collected, during both the development and the implementation periods of a project, that contributes to decision making or that documents the decision making process. The evidence can be obtained in a variety of ways: either by formal, experimental design, by some quasi-experimental design, by recording casual and anecdotal data during tryouts of materials, equipment, or personnel patterns, or by some combination of these.

The different purposes of evaluation should be recognized. Uses of data for creation and production need not be confused with uses of data for making inferences on the basis of statistical tests.

Formative Data

The type of evaluation discussed by most writers makes use of rigorously collected formal data exclusively, whether the purpose is formative or summative in nature. The formative kind of casually-collected informal data, collected to support decision making in system, product, or course development and improvement, is also useful. Casual data may be anecdotal or it may be from a closely-monitored one-of-a-kind performance of a single student, or of several students. These data are used as a basis for making changes in systems, materials, or methods, prior to a subsequent tryout. Such nonrigorous data are usually useless for statistical testing of generality of effects.

Summative Data

Lord and Novick (1968) suggest a way to formulate broad coverage instruments from a large population of measuring items. They present the methodology whereby all items can be used, in various instruments, if such coverage is deemed necessary.

Methods for obtaining comparisons for effectiveness and cost/effectiveness might be any variation of the following:

a) Using a single group as its own control, in a sort of before-after comparison.

b) Using a single group as its own control, by employing concomitant variation among sub-groups within the group.

c) Using an outside audience for comparison, via normed and standardized tests, for example.

d) Using the group or sub-group as a sampling unit for some analyses--by this process eliminating a large, expected within-group variance in trade-off for a greatly reduced number of degress of freedom.

A variety of designs for experimental data collection and suggested associated analyses may be found in Bloom, et al, 1971; Campbell and Stanley, 1963; Worthen and Sanders, 1973; and Winer, 1962.

Conclusion

There should be no competition between the purposes of summative and formative evaluation. Both are necessary. The activities complement one another. The kinds of data that are collected in any given case should be determined by the questions to be answered by the investigation, as well as by the quality of data that are obtainable and the possible conditions of administration.

Rationale for Format of The ETD Historical Record and Analysis

During staff discussions of how to approach the Historical Record and Analysis it was determined that there are at least five possible ways to approach a historical analysis, each with certain advantages and disadvantages:

1) Strictly chronological: although this approach is minimally subject to author bias, it does not encourage the raising of issues that may be both pertinent and difficult to document when available records do not provide sufficiently detailed information. Further, a strictly chronological approach is likely to prove uninformative to certain agencies interested in the history of the ETD, e.g., HEW, OE, NIE.

2) Organized around particular project topics or functions: this approach obviates the fragmentary nature of a strictly chronological format, in that it allows for the inclusion of certain information, not immediately available in document form, as context. It will, however, tend to de-emphasize important problems that do not pertain exclusively to one topic or function. The topic or function approach is subject to author bias, and may well organize information in a manner not useful to other interested agencies.

3) Organized around the structure of the ETD: this approach will very likely involve the discussion of specific persons more than is necessary or desirable, and it is of questionable generalizability to other projects. It may also de-emphasize issues that apply more to the project as a whole than to specific structures within the project. While this particular structure is arbitrary, it is not immune to author bias.

4) Problem-oriented approach: this approach will appear more negative than any of the others available, may appear fragmented, may neglect some of the available information, and is based on the assumption that certain sensitive

information can be gathered. However, a combination of the topic-oriented approach and the problem-oriented approach appear likely to provide information of use to other agencies and future planners.

We have decided to combine several of these approaches in different sections. A disadvantage of this combination is that the reports are somewhat redundant. An advantage is that the history is covered from a variety of viewpoints.

The Historic Document File for the Federation of Rocky Mountain States' Educational Technology Demonstration

One of the continuing tasks for the Stanford Field Team was to consult project documents for history recording purposes and to maintain a file of historic documents for the Project. These activities were carried out with the four following data sets:

1) Stanford Evaluation Planning Field Team files containing copies of important planning and negotiation documents obtained during the course of field team activities or supplied by the contract monitor and other Federal persons.

2) The personal records of the then Assistant Director of the project (through April 1973) and the personal files of the Project's Research Director (at that time). Each of these files contains several thousand documents--many of which are duplicated in the Stanford Field Team Document files.

3) The project files of Federal Department and Agency personnel, some of which are duplicated in the Stanford Field Team Document files.

4) Not all of the FRMS ETD Directors and Personnel saw fit to provide the Stanford Field Team with copies of planning and negotiation documents or records. Efforts of the Production, Utilization, and Career Development components to be helpful make our records of day to day activities for those areas more complete than for other areas.

These files contain nearly 5,000 documents, coded on the face of the document into the following categories:

I. Structure

A. Management Structure
B. ECS-FRMS relationships
C. ETD relationships with other agencies
D. Personnel
E. PERT
F. Consultants

II. Decision-making

A. Project scope
B. Internal priorities
C. Project output versus constraints
D. Decision identification

III. Tasks

A. Site selection
B. Funding and Budgeting
C. Production
D. Programming content
E. Research
F. Evaluation
G. Hardware and systems design

The most significant of these documents were used in the preparation of this Final Report. Day to day correspondence, memos, and other documents that were not representative of significant Project or Federal activities were not coded for the historic document file.

Request for Project Information

As the Stanford involvement with the ETD drew to a close, a request for information was sent to the senior persons who had been involved up to that time. The following facsimile details the contents and recipients of the letter. The responses received from ETD personnel are in the Appendix.

STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305

DEPARTMENT OF COMMUNICATION

ROCKY MOUNTAIN PROJECT OFFICE
2480 W. 26th Avenue, Suite 24B
Denver, Colorado 80211
(303) 458-1888

7 August 1973

Governor Jack M. Campbell
President, Federation of Rocky Mountain States
Suite 300 B
2480 W. 26th Avenue
Denver, Colorado 80211

Dear Governor Campbell:

We have mailed a copy of the letter below to the following list of persons. If you can think of anyone else who should, perhaps, receive such an invitation to respond, will you please let me know?

Thank you very much.

Mr. Michael H. Annison
Dr. Louis Bransford
Dr. John Cameron
Mr. Fred Ebrahimi
Dr. Larry Grayson
Dr. Albert Horley
Mr. Gene Linder
Dr. Richard Marsten
Mr. Arthur Melmed
Dr. James Peterson
Mr. Al Whalen
Dr. David Berkman
Mr. Jerry Brasher
Ms. Pam Coughlin
Dr. Robert Filep
Dr. Edith Grotberg
Dr. Gordon Law
Dr. Kenneth Lokey
Mr. Ben Mason
Mr. Dail Ogden
Dr. Alice Scates

"As you know, Stanford University, Department of Communication, has a contract with the U.S. Department of Health, Education, and Welfare to help plan formative evaluation of the Federation of Rocky Mountain States' Educational Technology Demonstration. Part of our task is to compile an historical record of the ETD, in order to provide as much useful information as possible for future development decisions.

While we currently have a listing of significant decisions and documents pertaining to the Demonstration, we would like to insure against omitting any important project information from the record.

Accordingly, we would appreciate your cooperation in making the record of significant events as complete as possible. A memo detailing what decision points, milestones, and documents seem to you to be significant to the project history would be most helpful.

Copies of documents could be sent to us in full, or simply described by general contents, date, to and from, etc.

Thank you very much for your cooperation."

Very truly yours,

Nancy H. Markle, Ph.D.
Research Associate

NHM:civ

For their response to this letter, we thank:

Mr. Michael H. Annison
Dr. Louis Bransford
Dr. John Cameron
Mr. Fred Ebrahimi
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Ms. Pam Coughlin
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Dr. Edith Grotberg
Dr. Kenneth Lokey
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Chapter III

NARRATIVE CHRONOLOGICAL HISTORY

Conrad G. Carlberg and David G. Markle

This section of the Chapter gives a chronological account of events, which records how the concept in Chapter 1 was implemented and upon which the analyses and recommendations in Chapter VI are based.

The history of the Educational Technology Demonstration is recorded in three periods: an early preparatory period from 1968 through 1971, a planning period from July 1971 through July 1972, and a developmental period from July 1972 through early fall 1973.

Early Work: 1968 - 1971

Overview

Beginning in 1968 FRMS undertook extensive communication with various federal agencies and other organizations, in an effort to lay the groundwork for a satellite communications project in the Rocky Mountain region. Several other agencies in the Rocky Mountain region had expressed interest in participating in such a project, so discussions focused on what was to be done and the nature of cooperative arrangements.

During this period, federal agencies that were interested in the development of satellite communications joined in recommending that frequencies be allocated for use in educational broadcasting.

Encouraged by this frequency allocation and by the evidence of regional interest in carrying out a satellite communications project, OE awarded FRMS a contract for initial planning of the demonstration. These activities are detailed below.

Initial Planning

In 1968 and 1969 members of FRMS explored the possibility of conducting a satellite-based education project in the Rocky Mountain region. Preliminary discussions were held with the Office of Education (OE) and Communication Satellite Corporation

(COMMSAT) (72/03/10A, 72/10/04A)[4] FRMS staff met with the National Aeronautics and Space Administration (NASA), with private companies working on the development of satellites, and with education officials in the region to explore their interest in such a project (72/10/04A, 71/01/14). As a result of these discussions, FRMS submitted the first of a series of proposals to OE in 1969. This initial plan focused on improving educational opportunities in isolated small schools in the Rocky Mountain region by means of educational television satellite broadcasts. While the proposal was not funded, it led HEW to contact FRMS two years later concerning a project which was to become the ETD. At about the same time the Western States Small School Project submitted a similar proposal to OE. The two organizations later agreed to cooperate on the project.

As a result of increased national and international interest in social experiments with the Applied Technology Satellite-F (ATS-F) (72/10/04A, 71/01/14) NASA agreed to add a 2.5 GHz broadcast capability to the satellite. This would allow it to be used with low-cost receivers (72/11/16). In September 1970, the Federal Communications Commission (FCC), agreed to allocate the 2.5 GHz frequency for educational television by satellite (72/11/16, 70/09/21) on an experimental basis. This policy position was forwarded to the World Administrative Radio Conference (WARC) via the Department of State. This request for frequency allocation represented joint agreement among the FCC, NASA, the Office of Telecommunications Policy (OTP) of DHEW, and the Office of Telecommunications Policy of the White House. The U.S. proposal was accepted at the WARC conference held in Geneva in June of 1971 (70/10/22, 72/11/16) and the way was cleared for the experimental use of the 2.5 frequency on the ATS-F.

Simultaneously HEW began to explore potential areas for experimental use of the broadcast time that would be available on the ATS-F. A number of potential experimenters were contacted, including FRMS (72/01/14, 72/11/16). As a result FRMS presented a preliminary plan in March 1971. The plan included career education in the public schools, early childhood education, and higher education. A cooperative effort was planned among the Education Commission of the States (ECS), FRMS, and the Western Interstate Commission for Higher Education (WICHE) all of which were developing projects in these areas (72/10/04A, 71/03/24). As a result of interest expressed by these and other potential experimenters, DHEW submitted a proposal in April 1971 to NASA for the inclusion of educational experiments on the ATS-F. By agreement among the chief Administrator of NASA, the

4. Source documents are referenced as explained in Chapter I, page 1.

Secretary of the Department of Health, Education, and Welfare, and the President of the Corporation for Public Broadcasting, CPB and HEW would jointly determine programming to be used on the ATS-F. The experiments would include health and child development in Alaska, and occupational skills, secondary school science, child development, and inter-university networking in the Rocky Mountain region. The child development programming would be based primarily on existing programs such as Sesame Street; occupational skills were to be directed primarily to American Indian groups; higher education would consist mainly of the distribution of existing programs (71/04/08). This plan was to be modified numerous times over the next two years.

Development of the First Planning Proposal

In May 1971, the Office of Education awarded FRMS a contract in the amount of $35,678 to "develop and articulate the organizational structure and planning to prepare for a 1973 HEW-CPB-NASA satellite experiment for the Rocky Mountain region." This contract was to run through September 31, 1971 (71/04/27, 72/02/24).

Upon receiving the contract, FRMS, WICHE, and ECS held regional and national meetings of experts in early childhood education, public school education, and higher education to collect information for the planning report. Regional input was obtained from state governments, teacher groups, students, business, broadcasters and minority group representatives (71/04/30, 72/03/10A).

The first major planning document for the satellite experiment was completed and submitted to OE in July 1971. It stated:

1) The Rocky Mountain Corporation for Public Broadcasting (RMCPB) would coordinate the broadcast and engineering elements of the experiment.

2) ECS would provide programming directed toward children with supplementary segments for parents; the latter would include some caretaker training.

3) FRMS would provide programs in occupational awareness, communications skills, and environmental studies.

4) WICHE would provide academic courses, public service education, occupational training, counseling, and communications. The communications materials were to include both literacy and English as a second language.

5) $26 million was requested to carry out the proposed activities (71/07/19, 71/06/16).

The proposal presented a plan to provide educational services to the people of the Rocky Mountain Region which would be implemented under the direction of FRMS. Production of needed software would be subcontracted in the region. It was assumed that 1) existing software would be inadequate for the purposes proposed, and that 2) there would be extensive applications of two-way, interactive programming using video, voice, and computer interaction. Staff would be hired in each of the states in addition to a central staff in Denver. The emphasis would be on a "user based service delivery system."

Negotiations and Planning Period: July 1971 - July 1972

Overview

The planning period of the ETD was characterized by progress toward general goals, by unanticipated delays, and by reductions in scope.

A planning proposal, identifying areas for information collection, was developed by the ETD staff and accepted by DHEW. The ETD followed up on this planning proposal by investigating literature describing prior experience with projects similar to the ETD, and by collecting data on regional demographic characteristics, on regional resources, and on existing programming. Contacts were initiated in the eight-state region in order to develop preliminary plans for site participation and site hardware. Content components were planning general implementation procedures.

Delays originated in a variety of quarters. Policy and personnel changes at the federal level required changes in ETD plans. Attempts to generate funding commitments for the planning and operational phases of the project met with unexpected difficulties. At the local level, delays that effectively demonstrated the functional interdependence of the components of the ETD forced a re-evaluation of the project's organizational structure. Compounding these difficulties were several reductions in the scope of the project. While these reductions made it more likely that the project would meet its goals, they nevertheless required changes in plans and reallocation of limited resources.

Initial Reductions in the Scope of the Project

DHEW indicated that it could not afford the $26 million effort proposed in the July 1971 submission. DHEW's stance was that the project should be an experimental demonstration rather than the large-scale service delivery system envisioned by the Federation. DHEW outlined a plan that would focus on comparisons of the effectiveness of various technology mixes to reach program objectives (72/10/04A, 72/03/10A). In August and September of 1971, FRMS restructured the original proposal based on discussions with USOE, HEW, CPB, and NASA. This revised plan was discussed with regional education, government, and television officials in order to enlist their support (71/10/05A).

In September 1971, there was a planning meeting of the FRMS staff, the Governor of Idaho (chairman of the FRMS Telecommunications Council), and representatives of numerous federal agencies. Following this meeting, the Office of the USOE Deputy Commissioner for Development was to organize funding for the ETD. The federal agencies that had attended the September meeting were surveyed as possible sources of funds. No agencies outside HEW expressed willingness to provide financial support for the proposal, even though FRMS staff had originally believed that a number of federal agencies would do so.

In October of 1971, the Commissioner of Education for DHEW met with representatives from FRMS, ECS, and WICHE. At that time he made a tentative commitment of $5 million for FY 1973 for a more limited experiment. This commitment was made while restructuring of the July 19 proposal continued under a contract supplement (71/10/26, 72/02/24, 7 /08/12). The program content of the project was reduced to early childhood and career development and defined as an educational technology 'experiment' or 'demonstration' (72/03/10A, 72/10/04A, 71/10/04, 71/10/07, 71/10/26). This seemingly unimportant use of words was to become a major source of confusion, conflict and funding difficulties: Was the project an experiment or a demonstration? What should its goals be? Who should be responsible at the federal level?

In November 1971, the first of numerous staff changes at the federal level occurred: the Project Officer was changed and the Director of Telecommunications Policy, DHEW, Office of Telecommunications Policy was named Project Coordinator. (72/03/10A, 72/10/30) Another contract supplement was awarded to FRMS to continue planning activities (71/11/15, 72/10/04A, 71/10/07, 71/10/26).

Discussions about the project occurred at a time when HEW was going through several policy debates: "services integration" was proposed by the Secretary, DHEW, with the purpose of combining health, education, and welfare programs, and "educational renewal" was proposed as a method to package discretionary monies in OE to support programs for children in areas of high need across the country. The creation of the National Institute of Education (NIE), a new agency to be the research and development arm of the federal government, was also proposed. Legislative hearings were being conducted on these and other proposals in 1971 and the result was numerous changes in policy, operating procedures, personnel and appropriations levels--all of which were to affect the project.

In January 1972, the revised planning proposal was submitted and a planning grant was awarded; $500,000 of the requested $800,000 was granted by USOE. According to this planning proposal:

1. The two program areas would be career development and early childhood development. Higher education programs were dropped.

2. A production and engineering group would be responsible for the satellite and ground communications systems and for all production. There would be approximately 300 sites in the region.

3. A utilization group would "localize programming" for participants at the sites and handle public information. Participants would represent all ethnic and geographic groups in the region.

4. Research and evaluation would be conducted by each of the project groups or components.

5. Most programming would be new. Some existing materials would be used.

6. Programs would make extensive use of two-way communications.

The two major participating organizations would be FRMS and ECS with support from WICHE and RMCPB. FRMS was the grantee responsible for career development, broadcast and engineering, and utilization. ECS was a prime subcontractor responsible for early childhood. The proposal constituted an agreement to complete seventeen specified tasks during the planning period (72/01/10, 72/10/30)

FRMS instituted a management monitoring system based on weekly reports of estimated proportions of tasks accomplished and amounts of money expended. The system was organized around the 17 tasks identified in the January 1972 planning proposal, with the responsibilities for the completion of these tasks divided among the four ETD components. The directors of the components were the decision-making body for the project (72/03/17). Each of the directors was responsibile for activities in his area--career development; early childhood; broadcast, engineering and production; and utilization. Responsibilities were organized on these conceptual areas instead of along functional/operational lines. This arrangement was to frustrate and produce delays in management decisions focused on functions for the following year. Conceptual/organizational boundaries did not always reflect functional boundaries, even though no component could operate effectively in a vacuum. For example, inter-component design groups had been organized in August 1972 to develop courseware and handle user implementation problems. These were abandoned within two months as they required more inter-component cooperation and information sharing than was obtainable. Another instance of this problem was a continuing debate over whether Utilization or Content components should be responsible for field operations. At one point there were three separate field operations--one in Utilization, and one in each of the two Content components.

Initial Component Activities

After approval of the plan, the Broadcast and Engineering component met with NASA and Fairchild, which built the ATS-F, to begin planning the design of ground system equipment. They also conducted a preliminary survey of existing regional transmission facilities. A major data source for this survey was ETD staff experience in the region. The survey covered PBS stations, network links between them, translator systems, and cable television systems (72/06/15A). The survey indicated that the design and operation of the regional terrestrial communication equipment was consonant with the capabilities of the ATS-F (72/07/28A).

In March 1972, the broadcasting and engineering plans were based on the assumption that the satellite would broadcast to public broadcasting stations in the Rocky Mountain region, some CATV systems, some translator systems, and a few individual sites unreachable by existing systems. Planning addressed both the quantity and quality of one-way video and two-way video, one channel audio, four channel audio, CAI/CMI, and remote uplink video-and-audio mixes to be utilized at the sites. Specific tasks undertaken by the Broadcast and Engineering component included the identification of satellite capabilities, planning for down-converter construction, and the identification

of field sources for broadcasting and receiving signals. Four types of site hardware were being considered: basic TV receivers, an auxiliary mode allowing the reception of narrow band signals in lieu of the TV signal, a low cost narrow band transmitter, and a single prototype of a TV transmission terminal to permit return video from remote locations.

The responsibilities of the Utilization and Research component, in March, 1972 included: coordination of site selection, identification and development of contract procedures for participating sites, demographic data collection, preparation of research procedures and designs, and the production of an explanatory and public relations brochure. Specific tasks assumed by the component included the collection of demographic data, the selection of test sites, the development of a research and evaluation program, the development of training models for on-site personnel, and the development of further contacts within each participating state (72/03/17).

The Utilization component information collection effort began in January 1972 with a three month review of literature on utilization approaches and procedures (72/07/28A). This was supplemented in February by a series of meetings with various agencies and government units throughout the nation to study utilization models and approaches. In February a subcontract was awarded by FRMS to WICHE to collect information on utilization models (72/02/25).

The Utilization component also used consultants to collect information. In March 1972 one consultant made recommendations on a public relations strategy for the ETD. In May, 1972 another reported on the advantages of using multi-lingual field staff in the utilization effort (72/03/10A, 72/05/11).

In March 1972 a contract was let through the Office of the Secretary, DHEW, to the Department of Communication, Stanford University to assist the Federation in planning for the evaluation of the operational phase of the ETD. This effort involved assisting in the development of specific objectives for the project components, the drafting of instruments to document project accomplishments, planning formative evaluation procedures, assessing the feasibility of a summative evaluation of the project, and providing a general history and analysis of the project planning phase. Between January and March 1972 the content components (Career Development and Early Childhood) conducted reviews of the literature, programs, and materials for possible use in the ETD (72/03/17).

To further assist in planning, two advisory groups were created. The Satellite Advisory Committee consisted of regional business executives, regional broadcasters and representatives from sub-contracting organizations. It was intended

to provide advisory input to the project as a whole. This group met twice. ECS formed the Early Childhood Technical Advisory Group, which consisted mainly of the ECS Early Childhood task force plus additional advisors from the Rocky Mountain region, to help guide the component's planning phase. As a result of some disagreement among members after the group's first meeting, they decided that no further meetings would be held; rather, the component would consult with individual members as needed (72/02/18).

FRMS also initiated cooperative work with the staff of the Alaskan Project. Areas of planned cooperation were engineering and early childhood with some discussions about career development (72/04/28B, 72/05/15A, 72/02/09). In March 1972, after reviewing other projects and studies of field support, Utilization and Early Childhood began the development of a general prototyping and field testing plan for validating programming. A start was also made on identifying factors to be included in the formulation of site participation agreements (72/06/05). FRMS staff asked state Governors to designate a single contact person in each state.[5] Except in Idaho, where the contact remained with the Governor's office, the Governors designated the Chief State School Officer. All subsequent contact in each state was to go through those designated (72/10/05). A plan for the organization and the function of the state field staff was then developed in conjunction with the states. The field staff as originally planned would consist of a State Coordinator, Circuit Riders, and site personnel (72/03/22, 72/03/27).

The Utilization staff of the ETD traveled to the 8 participating states to meet with each Chief State School Officer. The purpose of the meetings was to brief the school officers on ETD plans and to establish contact between content components of the ETD and the state agencies which were to be involved (72/04/28A, 72/05/15A, 72/03/21). These meetings were part of a "low profile" public information stance maintained to avoid raising false hopes before plans were made final (72/05/15A). The continuing debate on the goals, objectives, operating plan, and funding level for the project made it impossible to make commitments to states or cities in the region. It also compounded internal budget decision difficulties.

Lists of child care facilities in the region were compiled for use in site selection (72/07/28A). As FCC and IRAC deadlines approached, and as funding uncertainties continued this list was almost continuously altered and resubmitted.

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5. The six states in the Federation are: Colorado, Utah, New Mexico, Wyoming, Montana, and Idaho. Nevada and Arizona also were to participate in the Demonstration.

The Early Childhood component continued to study existing program resources. This was accomplished by visits to educational laboratories, attendance at teachers' conventions, review of commercial publications and advertisements, and meetings with state and local school personnel.

In April 1972 the Utilization component decided that field structures would vary among the states, depending upon local environment and conditions. The general basic structure would be the same in all the states with key field personnel hired by the ETD. These were to include the state coordinator, circuit riders, and the site coordinators (72/07/28A). Contact was initiated with the Navajo nation through the Navajo Tribal Chairman (72/04/25B, 72/05/15A).

While the content, engineering, and utilization planning was continuing the ETD learned that there would be a delay in the satellite launch date of from 6 to 12 months. This delay afforded the ETD extra time during the developmental phase (72/05/15A).

The preliminary design of the ground support equipment system was completed in April, 1972. Equipment specifications and installation costs were determined (72/06/15A).

Owing partly to an inability to come to agreement with funding agencies and partly to a delay in obtaining passage of the 1972 HEW appropriations bill, funding constraints had plagued the project. Project Staff decided that a specific plan for pre-testing software could not be made; they felt that not only were there insufficient funds, but also specific objectives and audiences had not yet been identified (72/06/15A).

The Early Childhood component was still developing plans for implementation. A subcontracted survey of instrumentation and measurement in child development was completed and a report submitted. The purpose was to identify measurement instruments that could be used in ETD evaluation (72/05/01A). In May 1972, subcontracted reviews of CAI/CMI programs existing in child development and career education were also submitted (72/05/15B, 72/05/15D). The purpose of these reviews was to examine existing computer based programs that might be suitable for use or adaptation by the ETD.

At about this time, a tentative general implementation plan was formulated by the Early Childhood Component. This implementation plan consisted of caretaker and parent training programs, a computer-based bibliography of child care techniques and information, and projections of the project's intended long term effect on state certification and coordination procedures. This tentative plan was set down in a formal planning document by the end of May 1972 (72/05/21).

In May, the management monitoring system had run its course for the components which had completed their planned tasks and activities. No replacement system was immediately implemented.

During May and June, 1972, a survey was conducted to identify possible signal receiving and uplink sites. This survey consisted mainly of examination of data concerning frequency allocations and the area coverage of these frequencies (72/07/28A).

The staff decided that the production unit should have full time availability of basic equipment in order to access the satellite (72/07/28A). Under the original plan most production was to be sub-contracted, and the ETD was to have a limited production facility. This procedure was expected to distribute both experience and economic benefits thus helping to develop regional production capability (72/07/28A, 72/10/30).

After discussions between OE and FRMS it was decided that FRMS would obtain a minimum capacity in-house production facility, rather than implement the original plan. The construction of a limited capability production studio was not, however, officially approved until February 1973 (72/07/28A, 72/10/30). The facility would probably consist of electronic production equipment, and possibly would include a mobile unit for production and transmission from remote areas (72/07/28A, 72/10/13).

Reorganizations, Changes, and Delays

In June 1972, after numerous internal discussions and talks with federal officials, it was decided to reorganize the responsibilities for public information, research, and internal evaluation. There would be a director for each of these functions located in the Administration component, and staff for each function would be located in each of the other components (72/10/05, 72/07/28A).

An attempt was made to align operating and functional responsibilities more accurately. Since each component was staffed to perform many functions--some overlapping with other components but none equipped to handle any overall function for the complete demonstration--a high premium was placed on cooperation. The management conflicts that this organizational structure produced were not resolved for more than a year.

The staff determined in June 1972 that a large amount of new programming would have to be made for the ETD project, as there were not enough satisfactory programs available in the

chosen subject matter areas. Furthermore, new programming was expected to be better because programs would still have to be relevant in June of 1974, at the end of the satellite's scheduled broadcast time. Programming was of central importance in the continuing discussions of project focus. A general statement of objectives for the Career Development component was formulated (72/07/28A).

Various problems and delays began to surface in June. Because the target audiences had not been specified, and because specific operational objectives had not been formulated, it was not possible to develop a sampling design or to identify experimental and evaluation variables in detail. One effect of this delay was to prevent final site selection. Because sites had not been selected the staff felt that they could not complete the planning for validating data collection instruments and for allocating ground equipment systems. Each of these issues was compounded by conflicting federal guidance and by the difficulty of reaching solid internal project decisions. In order to plan the satellite system and a backup system, it was necessary to do an extensive survey of terrestrial broadcasting capabilities existing in the region. The staff thought that there was not enough money to perform the survey.

On June 1, 1972, the first draft version of the ETD planning report was sent to Washington. On June 16, DHEW requested revisions in the planning report, including further reductions in the scope of the project and more precise specification of project objectives. On June 25, this revised planning report and proposal were sent to Washington.

In addition, in June 1972 a $300,000 planning grant was awarded by the Department of Manpower Development and Training to explore possible joint benefits for the Federation and the DMDT (72/05/09, 72/06/15B). The Olympus Research Corporation of Salt Lake City was a sub-contractor to the Federation, carrying out part of the work for the DMDT planning grant (72/09/05).

The Department of Labor awarded a $50,000 support grant to the Federation to explore the feasibility of the Demonstration's preparing the way for expanded delivery of DOL services on satellites to follow (72/06/15B).

The June 25th version of the Report and Proposal was then extensively revised and rewritten in accordance with criticisms and suggested revisions sent from DHEW on July 7. The second revised version of the Report and Proposal was submitted on July 28 to DHEW (72/07/28A, 72/07/07B). The DHEW Budget had not been approved by the President; no contract was in place for 1973; and the project was supported under continuing resolutions and an extension of the planning grant.

Under the plan submitted on July 28, the Utilization component took on three additional responsibilities: 1) it would obtain user input and involvement in programming, 2) it would incorporate ETD programs into permanent structures within the Rocky Mountain region, and 3) it would coordinate ETD resources with existing resources in the region (72/07/28A).

Plans which delineated the steps necessary to obtain prototype sites by October 1973 were made by the Utilization component. These included the necessary contact and agreement steps (72/07/06A).

The design groups (mentioned earlier) composed of staff from Early Childhood, Career Development, Production, Broadcast and Engineering, and the Stanford evaluation planning group, were created to assist the two content components in planning broadcast content. These groups worked for two months. An attempt was made to specify steps for the empirical development of component programs (72/07/28A).

An ATS-F program review meeting was held in Washington during July with representatives from DHEW and CPB attending. The technical features of the satellite were presented and described and representatives from FRMS, Stanford, and the Alaska and Appalachia experiments presented reports on the status of their planning to NASA (72/07/05A, 72/07/06B).

Developmental Period: July 1972 - October 1973

Overview

The activities which were planned for the ETD developmental phase were, with few exceptions, impeded by a number of reversals. These, plus new directives from the federal level, maintained the ETD in an almost constant state of flux.

Funding delays were beginning to affect the project in July. New staff were brought in for the developmental phase of the project. The scope of the project was again narrowed. Clearance for an uplink frequency was refused. The lack of specific program content caused delays. Directives restructuring a major portion of the project were received during a transition of responsibility for the project from OE to the newly created National Institute of Education. A group of observers from NIE reviewed the progress of this project in April during a site visit in Denver; their assessments were predominantly negative. The project was extensively restructured. A full time Project Director was appointed.

Funding Delays

By the end of July, 1972 anticipated funding delays imposed restraints on planned ETD activities. The ETD staff decided to concentrate on the design of instructional material, the development of field support staff, and the implementation of a new PERT management information system until funding availability allowed necessary travel to the states and sites (72/08/07B,C; 72/07/31).

Beginning July 1st the ETD was supported on a month-to-month basis under a continuing resolution. In August 1972, the President vetoed a bill authorizing the new HEW budget. The veto meant that even if an agreement could be reached with the funding agency, the ETD would continue to be funded under continuing resolution and therefore at a limited level at least until Congress re-passed the appropriation in amended form (72/07/28A, 72/07/28C, 72/07/31, 72/10/30, 72/11/20).

In August, the component Directors submitted estimates of staffing needs for the developmental and implementation phases. Necessary administrative support services were identified and job descriptions were prepared. In the continuing discussions on management, a decision was made to form a separate Production component, removing Production from the Broadcast and Engineering component. The new component's primary responsibility would be to coordinate and monitor subcontracted production (72/08/08A, 72/10/13).

The location of the regional uplink and origination and delay center had not been determined. Two options existed: 1) the Federation might own and operate the center; 2) one of the PBS stations in the region might handle these functions. An agency to handle overall hardware systems and integration for satellite educational experiments had not been designated. This function could be subcontracted out or it could be handled either by the ETD, the Appalachia or Alaska experiments, or the health component (72/06/15A). A decision to have FRMS do it was made in August 1972 (72/10/11).

NASA decided to give the Broadcast and Engineering Component of the ETD the responsibility for the operation of the master station; in effect, this step made FRMS responsible for the satellite educational communications system (72/10/11). The uplink and origination center for the ETD would be operated by the Broadcast and Engineering component, as it was decided that the PBS stations in the region could not afford to perform this function (72/06/15A, 72/10/11, 72/08/25B).

In September 1972, DHEW requested that the ETD place less emphasis on content and more emphasis on the comparison among various delivery systems and technological mixes (72/09/14A).

It also requested a more brief and specific statement of the operational plan and scope of the ETD (72/10/02).

After numerous discussions with federal officials the Addendum to the report and proposal of July 28, 1972 was completed and sent to Washington in October--well into the fiscal year. The purpose of the Addendum was to distill from the larger document a succinct and specific statement of ETD plans for use in obtaining funding for the development period (72/10/02).

A very general research design for the project was formulated as part of this document. Data analysis would employ the site as the experimental unit. About 60 sites would be studied in depth: 30 "intensive" sites and 30 "non-intensive" sites (72/10/02). This plan was never fully agreed upon among the ETD components.

Representatives from NASA visited Denver and briefed the entire ETD staff on deadline requirements with reference to the data of satellite launch (72/09/14A).

During September, as funding became available, meetings were held in the states with representatives of the Chief State School Officers. The major purposes of these meetings were to interview the applicants who had been selected by the states for the State Coordinator positions and to prepare hiring agreements. Site selection was also discussed and reports on the progress of the ETD were presented (72/09/25, 72/09/28, 72/10/05).

In late October 1972, State Coordinator training meetings were held; because of time constraints the training period was shortened to one week instead of the planned six weeks (72/10/02).

State Coordinators made site visits in their respective states in order to formulate recommendations for final ETD sites in November. Ten 2-way sites would have to be selected by November 15 to meet FCC clearance for filing deadlines (72/10/26B, 72/10/26F, 72/11/22).

It was necessary to file with the FCC by November 15 to obtain permission to operate the microwave link needed by the ETD. In order to file, however, detailed technical information was needed. There was no money available to collect the needed data (72/10/11).

The President signed a continuing resolution authorization for HEW. This action meant that the ETD would have to be funded by HEW under continuing resolution for the developmental year (FY 1973) (72/10/30). The impact of this was to confound the program and contractual relationships with DHEW, the Office of Education, and potentially with the newly formed National Institute for Education. The financial problems,

combined with the consistent inability to reach agreement on the goals and scale of the project continually frustrated decision processes within the project and at the federal and state level.

Additional Problems

Toward the end of 1972 both the Early Childhood and Career Development components were conducting limited needs assessment surveys. The purpose of the surveys was to identify needs common to the region as a whole and needs unique to certain areas. This user input was intended for use in making specific programming decisions (72/10/26A, 72/10/26E). Instead of being one of the first steps taken in project planning, this activity was going on eleven months after the first contract had been awarded.

Finding a director for the Production component had been very difficult. The search had been continuing for the four months since the August decision and the delay in filling this position produced undesirable delays in production decisions and activity (72/10/13, 72/10/30). In late November 1972, a director for the Production component was hired, as was a Research Coordinator (72/11/22). These two appointments completed the senior staff.

A list of more than 300 potential sites was sent to Washington for clearance through IRAC and FCC in December (72/12/04A).

In August of 1972, a new and more comprehensive management information plan was implemented. A full-time staff member had been hired to oversee the system; 1500 to 2500 activities were to be monitored by the system. Most of the completion dates for PERT tasks and activities were set back one month or more during December. The major cause of the scheduling delay was the inability of the content components to specify program content. This factor delayed Broadcasting and Engineering activities, site selection, production planning, evaluation planning, and program scheduling (72/12/04A). In late December of 1972 it was becoming clear that unless content was specifically defined and complete scripts drafted very soon it would be impossible to meet either the prototyping deadline of March 1973, or the satellite deadline of April 1974 (72/12/26).

Early in 1973, the primary audience for the Career Development component was narrowed from grades K-12 to grades 7-9. Career personnel and project monitors had agreed that the audience should be narrowed because of time and resource constraints. Grades 7-9 were chosen because many states in the region already had career development programs in grades K-6. A secondary audience was to be adults in the region who are responsible for adolescents in home and institutional settings.

In January it became evident that, for reasons of national security, IRAC might not clear the frequency that was to be used for the uplink from intensive terminals (73/01/26A). This uplink was to be the return link for two-way broadcasting.

The Early Childhood component had decided what the user needs were and what objectives and competencies were to be taught; production on the first of the Career Development modules had begun (73/01/26A).

Prototype sites had been selected by the Utilization component and visits to the 274 tentatively selected demonstration sites were being planned in order that information for final selection decisions might be collected (73/01/26A).

In February the OE staff notified FRMS that a number of changes in the project would be necessary. These included a limitation of video courseware to live or short lead time production; the inclusion of as much interactive capability as possible in the courseware; the restructuring of content component staffs; the confirmation of specific remote site audiences; and the selection of a full-time project director. (The President of FRMS had been directing the project on a part-time basis, with the assistance of an Assistant Project Director). FRMS was also instructed to proceed with the creation of a median capability studio facility and to purchase equipment to access the satellite and to equip a network control center (73/02/27).

Immediately following these directives (March, 1973) was the news that IRAC had refused to grant the clearance for broadcast to the satellite from remote sites (73/03/21A).

The February directives from the Office of Education led to the cessation of all new script production for the Early Childhood component and for the Career Development component (73/03/21A). These events were inconsistent with usual guidelines for both federal and grantee activity. Every aspect of the project was affected by these events and negotiations about goals, objectives, and implementation proceeded in a far less amiable environment.

By April 1973, the satellite communication design had been completed by the Broadcast and Engineering component. The Career Development component was structuring and outlining their script production; no scripts had yet been written. The Early Childhood component was completing scripts in a modular format. The Production component was releasing studio equipment bids and identifying available production talent for eventual staffing of the studio. The Utilization component was finalizing its prototyping plan (73/04/25).

The Early Childhood component was prototyping its input/feedback model by April, 1973. The Production component had selected a location for its studio, and the Utilization component

had visited 70% of the nominated receive-only sites. Script production in the Career Development component began. The Early Childhood component had forwarded fifty minutes of scripts to the Production component. Production activities were, however, in "hold" status pending funding decisions.

The activities during April and May, 1973, are described above as they were listed in the minutes of the management's Status/Review meetings for the two months. How much actual progress occurred during this time is not clear. The predominant atmosphere among much of the ETD staff at the time was one of uncertainty. Few personnel were certain for how long, and if, they would continue to hold their jobs. A visiting team was assembled in April by OE and NIE for a site review of progress. The overall response of the panel's members to the project was critical of most components and components' progress (73/04/15, 73/04/16, 73/04/17, 73/04/18A, 73/04/19A, 73/04/19B, 73/04/19D, 73/04/20A, 73/04/20B, 73/04/23). One of the results of the panel members' visit was a strong insistence by the National Institute of Education that there be a full-time Project Director. The Assistant Project Director was ineligible for the position; the Director of the Broadcast and Engineering component was named to be the Project Director.

During late May and early June, the new Director began negotiations with a new federal monitoring team for Fiscal Year 1974. As a result of these contract negotiations, the ECS Early Childhood sub-contract was eliminated and the Career Development content area was retained. The Career Development component, one of the areas that was reduced, was placed within the Production component. Further reorganization established a new Research group. Budget cuts as well as staff resignations had reduced the number of staff from 100 to 64.

At the beginning of Fiscal Year 1974, the project was operating at a substantially reduced level. Discussions were continuing among officials and ERMS on the nature and scope of the project. By October 8, 1973, when the Stanford University Contract ended, funding had still not been settled for FY 1973-1974. Another issue that was still unresolved was the potential use of two-way communication.

Chapter IV

HISTORY FROM THE ETD COMPONENT FUNCTION VIEWPOINT

Conrad G. Carlberg

In this Chapter a discussion is undertaken of the functions and ETD activity of (a) the Content Components, (b) the Utilization Component, (c) the Broadcast and Engineering Component, and (d) the Management and Monitoring System.

This chapter represents the viewpoints of FRMS staff to a greater degree than do other chapters in this report. The author worked, to a large extent, from documents prepared by FRMS staff rather than from direct observation. Many of those documents are informal and undated.

Content Components

Both content components collected information for program planning during the planning period. Although much of the ETD's information collection activities were regionally based, some did not involve the Rocky Mountain region. The major sources of this information were written data archives and consultants.

In February, 1972, the Early Childhood component experimented with the establishment of a Technical Advisory Group to provide information on program design and evaluation in the early childhood area. This group met for the first time on February 18. As a result of a disagreement with ECS staff, participants decided not to meet again as a group but to make themselves available on an individual basis for consultation as needed. Members of the group had been drawn primarily from an ECS task force committee on early childhood.

Beginning in March, 1972, and continuing for the next three months, existing program resources in the area of early childhood education were investigated. The early childhood component staff visited regional educational laboratories and teachers' conventions, and they reviewed commercial catalogues and advertisements. Discussions were held with state and local school personnel. The program resources identified were examined for their potential use in the ETD (72/05/21).

A portion of the review of existing program resources was subcontracted. The report of this subcontractor, which was submitted in early May, reviewed CAI and CMI programs existing in the early childhood area. The purpose of the

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review was to examine existing computer-based programs that might be suitable for use or adaptation (72/05/15B).

Another report on subcontracted information collection was also submitted in May. This report identified measurement instruments that might be used to evaluate early childhood efforts (72/05/01A).

The career development component's information collection activity proceeded on a pattern similar to that of the early childhood component. During January and February, a review of research literature in the area of career education was conducted. In this same period the major portion of a review of existing career development programs and instructional materials was conducted. For this review, consultants were brought to Denver and career development component staff made site visits to career education centers around the nation. In May, a report was received on a subcontracted survey of existing CAI and CMI programs on career education. In April, a survey of regional public and private resources in career education was initiated. Throughout the entire planning period, a survey of existing career education measurement instruments was conducted by the component staff (72/05/15A, 72/07/28).

Several major restrictions to the scope of the ETD were made in May, 1972, just prior to the preparation of a planning report and proposal in June and August. At a meeting with representatives from state government agencies concerned with early childhood, a final decision was made to restrict the scope of programming in the early childhood area exclusively to adults with child care responsibilities. No programs aimed directly at children as an audience would be prepared. The decision was based on state preference and on information that had been collected during the planning period.

At the same meeting, plans to implement a computer based bibliography of child care techniques and information were mentioned, and ways in which the ETD might effect long term improvements in state early childhood care certification and coordination procedures were discussed (72/05/21).

Two major restrictions in the potential scope of the career development portion of the project were made during the planning period. Early in the planning period the possibility of including some actual training in specific vocational skills in the programming had been considered. Later it was decided instead to retain the exclusive program emphasis on career information and counseling functions, because actual vocational training was beyond the capabilities of the ETD.

A major restriction was made in the scope of the audience the career development portion of the project would address. The project had intended to provide career education of grades K-12. However, after ERMS/OE discussions, a decision was made to restrict the audience to adolescent students (73/01/19A).

Seven major tasks were identified by the Early Childhood component as preliminary to actual content programming: a preliminary review of the literature, the listing of alternative behavioral objectives, the selection of behavioral objectives, a continuing literature review, a continuing analysis of an early childhood development data base, a review of existing software and hardware, and an analysis of instrumentation needs (72/03/17).

Tentative career education research variables had been identified and listed by March, 1972. The independent variables included population considerations, delivery systems, and supplementary assistance as categories. The dependent variable categories included attitudes and skills. A review of career development literature and media was instituted. Identification of potential production facilities was undertaken and a rough outline for prototype programming was completed (72/03/17).

During April and May of 1972, contact was made throughout the region with various individuals and agencies that might provide useful input to the ETD, and with representatives of the eventual user population. Early Childhood component staff members met with television station departments of education, state Departments of Education, educational broadcasting companies, and data processing companies. User population representatives included, among others, the Navajo Tribal Council, the Nevada State School Superintendents, and the Arizona State P.T.A. (72/05/01B).

On May 20, 1972, the Early Childhood Development Component held a conference in Reno, Nevada. Component staff met with the Early Childhood Development designees of the Chief State School Officers to address regional and state issues in early childhood development. Issues which were reviewed and critiqued included considerations pertinent to government and institutions, teacher training, parent involvement, licensing and certification, consumer attitudes, and children's programming (72/05/21).

During August of 1972, two design groups, one for each component, were named. Design groups were intended to be multidisciplinary and thus included representatives from Engineering and Utilization (72/08/01).

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The Early Childhood design group settled on a developmental process model consisting of four phases: developmental testing, prototyping, pilot testing, and demonstration. The types of baseline information and the evaluation techniques necessary for the development testing phase were discussed. The group considered the fact that available time for identifying hardware, software, and personnel variables was growing short. Another issue was inducements for parents to come to a central receiving site. If the programming itself were not sufficient inducement, the major Early Childhood audience might have to be reached at home: this would mean program distribution by cable and ETV network outlets. The latter, however, would not commit themselves to participation unless and until they could pass on program quality. A third issue that received continued attention was the question whether one could specify behavioral or measurable objectives for early childhood education. The design group decided that the production process should begin in early September, 1972, beginning with a set of objectives that had already been developed (72/08/23).

The design group effort had initially appeared promising, providing as it did a chance for improved intercomponent communication. However, the Early Childhood design group did not proceed beyond the initial discussions, owing to uncertainties about group leadership and authority. The career development group met intermittently, but eventually ceased to exist.

Field coordinators for each state had been selected by October, 1972, when a meeting was held for the purposes of state coordinator orientation and training. At this meeting it was decided to undertake a needs assessment in early November to obtain user input for program design. This assessment would consist of interviewing three types of people in each state: (1) parents, child care teachers and staff, and community leaders; (2) professionals (university-based experts in child development); and (3) government agency staffs. These interviews were to be conducted by the State Coordinators (72/10/26A).

The needs assessment for the Career Development component was to begin in the middle of November. The assessment was to be accomplished by the use of an instrument that had been pretested in October. It was to be administered to junior high and high school students by the Career Development staff (72/10/26A).

The February, 1973 directive from the Office of Education brought about major changes in both the structure and function of the content components. Courseware was to be designed to include as much interactive capability as possible, using

primarily digital feedback. The emphasis in production was changed to primarily live and short lead time programming. Thus, the staffs for the two content areas and associated production staffs were to be reduced. Script production in both content components came to a halt in February. Content components turned their attention to revising objectives and scripts that had already been produced, restructuring the body of program content, and creating test items from content objectives (73/03/21A).

A further revision in content plans came about in early 1973, when NASA indicated that the time required to realign the satellite between the footprints was greater than expected, thus cutting time available for ETD programming from twenty to fourteen and one-half hours per week (73/03/21A).

Prototyping

Prototyping considerations had surfaced by July of 1972. Population and accessibility characteristics of prototype sites were being discussed, as were the program prototype criteria to be fulfilled at the sites (i.e., the amount of ETD program and the number of subjects to be involved). The site selection procedure and the training and functions of support personnel were under consideration. It was also noted that information was needed on the selection criteria for prototype sites, the number of subjects needed at the sites, a specification of the program content at the prototype sites, and a training schedule for state coordinators and circuit riders (72/07/08).

But by December of 1972 it was clear that time constraints would rule out the use of programs produced in-house during the prototyping period scheduled for March of 1973. It was also apparent that it would be difficult to obtain subcontracted programs for the prototyping period. It was suggested that the prototype period be postponed until materials to be tested had been prepared (72/12/04B).

Utilization

The responsibilities assumed by the Utilization and Research component at the outset of the ETD project included coordination of site selection, identification and development of contact procedures at each site, preparation of research procedures and designs, and design of a public relations brochure. Tasks included collection of demographic data, selection of test sites, the development of a research and evaluation program, the development of training models for on-site personnel, and the development of further contacts within each participating state (72/03/17).

The Utilization component information collection effort began in January 1972 with a three month review of the literature on utilization approaches and procedures. This staff-conducted literature review was supplemented in February by a series of meetings around the nation with various agencies and government units to study their varying utilization models and approaches. In February a subcontract was awarded to the Western Interstate Commission for Higher Education to collect information on alternative possible utilization models (72/02/25).

Collection of information about the region was started in February with a survey of regional demographic data. A review of potential resources and constraints on a regional utilization effort was also initiated in February. Regional information collection continued into April 1972, when a survey of PBS services in the region was conducted (72/10/05).

The Utilization component also made use of consultants in information collection activity. In March 1972 a consultant's recommendations on a public relations strategy for the ETD were obtained. A May 9 consultant's report analyzed the advantages of multi-lingual field staff in the utilization effort (72/03/10B, 72/05/11).

Planning continued through April of 1972, when efforts were directed to implementing utilization plans. A program for initial training of the state cadre in each of the participating states had been developed. It included an orientation to the project, role responsibilities, data evaluation and collection procedures and models. An overview of the content components was prepared, as were a description of broadcasting and engineering considerations and identification of media resources and their utilization (72/04/24). In addition, contacts for planning utilization procedures in each of the eight states were progressing. Followup contact meetings were conducted during the month of April in Denver to discuss specifically each state's specific needs and ideas. These meetings were attended by representatives from

the Department of Education and Social Services, designees from other selected agencies, and members of the Early Childhood Development component staff (72/04/28A).

During September and October of 1972, the Utilization staff made visits to New Mexico, Utah, Montana, Idaho, and Arizona in order to present an update of ETD progress, to explain the current thinking on state structure and the position of State Coordinator, and to discuss criteria for site selection. These discussions were held with representatives of the Departments of Education of each state (72/09/25, 72/09/28, 72/10/16).

Utilization planned three different field support systems: high, medium, and low levels. It also developed plans for prototyping field support systems and for the provision of field information services.

Utilization, as is noted above, was responsible for the coordination of the site selection process. The process was initiated in March of 1972, when a list of all possible sites was drawn up by Utilization. These lists were taken to the Office of the State Superintendant of Schools in each state for revisions and suggestions. This process continued through April, May, and June, when component representatives were discussing the nominated sites with state agency staff. It was felt that this give-and-take process had pleased the states: they felt they had provided real input into the site selection process (72/10/05).

A NASA deadline briefing on September 14, 1972 required selection of thirty intensive sites by November, 1972 (72/09/14A). State Coordinators were to identify sites for installation of two-way terminals for prototyping operations and for needs assessment. By November 15, nine or ten sites were to have been selected for FCC clearance of two-way equipment. Selection was to be based on ethnic and cultural characteristics, language variables, geographic variables, personnel availability, and installation selection factors. However, in memoranda which resulted from a visit by USOE representatives in December, 1972, it was noted that there was considerable redundancy in the sites selected: two-thirds of the sites were located in areas already being served by PBS stations (72/12/18) By March, 1973, this difficulty had apparently been corrected and a site agreement plan was being drafted (73/03/21A).

Broadcast and Engineering

Technical Questions

The initial technical focus of the ETD was on use of two-way audio and video for interaction with the audience. Computer assisted instruction was also under consideration. As a result of funding constraints as well as non-monetary planning decisions, this focus has been changed to include possible use of a computerized data bank and digital transmission of data, with only limited two-way audio and few or no two-way video applications (73/01/19A). Subsequent changes have further limited the technical possibilities.

In March, 1972, the Broadcast and Engineering component indicated that its planning was based on the assumption that the satellite would be broadcasting to public broadcasting stations in the Rocky Mountain region, CATV systems, translator systems, and to individual sites. Planning addressed both the quantity and the quality of one-way video/two-way video, one channel audio, four channel audio, and CAI/CMI remote uplink video-and-audio technological mixes to be utilized at the sites. Specific tasks undertaken by the Broadcast and Engineering component included the identification of satellite capabilities, planning for down converter construction, and the identification of field sources for broadcasting and receiving signals. Four hardware configurations were also being addressed: basic TV receivers, an auxiliary mode allowing the reception of narrow band signals in lieu of the TV signal, a low cost narrow band transmitter, and a single prototype of a TV transmission terminal to permit return video from remote locations (72/03/17).

By late October of 1972, the ETD was planning on 200 receive-only terminals (one-way video) at a cost of $3,000 each, 31 intensive sites (two-way video) at a cost of $4,000 each, and 76 two-way audio sites at a cost of $6,500 each. These included 46 sites to be used in the Alaskan experiment and 15 sites to be used in the Appalachian experiment, for which the ETD Broadcasting and Engineering component had been given the responsibility of integration and implementation (72/10/25B).

Beginning in December of 1972, a number of problems began to surface. Postponements became obligatory. One scheduling delay involved the interdependence between plans made by the Broadcast and Engineering component and the production of program content by the Early Childhood and Career Development components. On the one hand, Broadcasting and Engineering had a number of fixed deadlines for equipment purchase and installation which had to be met and which were,

in part at least, dependent on content component plans. On the other hand, the content component needs assessment efforts, and their desire not to specify content before the needs assessment was completed, had delayed their content specifications. Further, the bids on the receive-only terminals ran much higher than had been expected, and difficulties in receiving clearance from International Radio Allocations Commission (IRAC) for the intensive terminals had caused delay in their construction (72/12/04A).

Another major source of schedule slippage was the necessity for ETD coordination with the Alaska and Appalachia experiments. Coordination was necessary before a final satellite schedule could be determined and NASA was requesting this as soon as possible. However, the Alaska and Appalachia projects were even further behind in specification of program content than was the ETD (72/12/04A)

Frequency Allocation and Clearance

In 1971, the Department of Health, Education, and Welfare, the National Aeronautics and Space Administration, and the Federal Communications Commission cooperated in a successful effort to obtain from the World Administrative Radio Conference an allocation of 2.5 GHz for broadcasting of educational services via satellite (71/04/08, 71/04/14B).

One of the unique aspects of the ETD was to be the provision of interactive, two-way communication between the point of program origin and the remote receiving sites. It was assumed by project planners that the 2.25 GHz would be available for broadcast from the two-way (intensive) sites to the satellite, thus providing the return link to the point of program origination (73/03/21A).

This assumption was mistaken. In January, 1973, the International Radio Allocations Commission, one of the agencies from which clearance to use the frequency for uplink purposes was necessary, indicated that it might refuse to grant frequency clearance for the proposed intensive sites. This naturally caused deadline problems for the ETD. NASA required that intensive terminals be installed by October, 1973, for simulation tests. However, it made no sense to issue Requests for Proposals for construction of the intensive sites until clearance had been received from IRAC. The clearance was officially refused in March of 1973 (73/03/21A, 73/01/26A).

This left NASA and the ETD with several unpalatable alternatives. One was to redesign the ATS-F satellite so that it could handle another frequency for two-way interaction. This alternative was dropped when such redesign

was found to be too costly in money, time, and manpower. Another alternative was to use the two existing satellites, ATS-1 and ATS-3, for interactive communication. This was not a particularly happy alternative, because both satellites were then operating beyond their life expectancy and failure could have occurred at any time. In addition, the sound quality delivered by either left much to be desired and video transmission was not possible. The compromise of using ground lines for short distance transmission and using existing satellites for long distance transmission was considered (73/03/21A). As of October 1973, the questions regarding two-way transmission were not resolved.

Management Monitoring System

Efforts to design an information monitoring and accounting system for the project began in January 1972. This system was to identify all tasks, means of accomplishment, staff responsibility, costs, and time requirements. The system was based on seventeen basic project tasks which had been identified in the January 10, 1972 planning proposal. It was linked with an automated accounting system. Information was fed into the system by means of weekly component reports of monies expended and percentage of tasks completed. These progress figures were compared with planned progress figures. A work-completed and cost-to-date ratio would then define the progress made on each task in weekly reports. The system was intended to enable project administration to monitor all planning activities, make decisions at appropriate times, and to modify planning approaches as necessary. A summary of tasks, progress, and costs to date appears in the March 17, 1972 Progress Report (72/03/17).

In May this information system was terminated. It was noted that the tasks and anticipated work flow defined in the management information system formed a theoretically sound base for the operation of the project. It was also noted, however, that day-to-day operational needs were occasionally frustrated by this theoretical base, which tended to build inflexibility into the on-going operation of the project (72/03/17). Additionally, task activity was being concluded in preparation for the writing of the June Planning Report and Proposal. A further reason for termination was that the ETD staff had expressed disappointment in the system's ability to reflect actual project activity accurately, its flexibility, and its capability to facilitate internal communication and task coordination. These problems were attributed to the fact that the system had not been staffed on a full-time basis and to the fact that it had not been automated. The need for a useful system was, however, still apparent (72/01/19B).

Accordingly, in August of 1972, implementation of a new and more comprehensive management information plan was started. The second version of the management information monitoring system was a more ambitious undertaking than the first. A full-time staff member was hired to oversee the system. In addition, the system was automated. Specification of the 1500 to 2500 activities to be monitored by the new information system began in August. The system's output would be 1) a PERT-Chart, consisting of a computer-graphic showing the order to tasks and their inter-relationships, and 2) reports on performance and progress accomplished which would result in adjustments and resource allocation and the restructuring of activities (72/08/08A).

In a federal memorandum dated August 23, 1972, commenting on the FRMS July 28, 1973 Progress Report and Proposal, it was noted that the latter document lacked a work plan and budget for the next project phase, and that a work-flow PERT chart did not constitute such a work plan (72/08/23).

By October 28, 1972, a bi-weekly opportunity to change tasks (if necessary) was made available. A coding system, in the final stages of preparation, would cross-relate PERT tasks, sub-tasks, and phases with cost items in order to determine how much each activity cost. The accounting system was to be based upon daily time sheets filled out by each ETD staff member. In addition to reporting their own time, State Coordinators were to report consultant time and part-time help obtained from state agencies (72/10/30).

By October 30, 1972, the design of the PERT system was complete. Implementation was to begin in mid-November, when the accounting codes, which were the reporting basis of the system, were completed. The extent to which the PERT system was successfully implemented and proved to be of functional value was seen as potentially important for other projects. PERT techniques had not previously been extensively applied to a large scale social project (72/10/30).

By this time the number of basic tasks monitored by the PERT system had been reduced to 14. The system utilized the IBM Project Management System (PMS IV) (72/11/17B).

In early December 1972, the PERT system had made obvious the need to change various estimated completion dates of tasks and activities. In the rescheduling process, the effect of PERT was to clarify interdependencies in task completion schedules. Failure by one component to complete a task as scheduled required the "slippage" of completion dates of tasks in other components. The major pressure to adhere to a firm schedule came from the Broadcast and Engineering component, whose tasks were inherently most specifically defined and whose deadlines were most unavoidably final (72/12/04A).

Chapter V

ANALYSIS OF THE HISTORY OF THE FEDERATION OF ROCKY MOUNTAIN STATES' EDUCATIONAL TECHNOLOGY DEMONSTRATION AND RECOMMENDATIONS FOR FUTURE PROJECTS

Nancy H. Markle and David G. Markle

Introduction

The FRMS ETD was conceived by on-site planners as a project of large scale and scope that would solve many problems for many persons in the Rocky Mountain region. At the same time it was seen as an information gathering effort, rather than a problem-solving effort, by some federal planners.

Trying to put together a project that is large in scale and scope as well as highly innovative is a difficult policy and operational undertaking. Experimental investigations and evaluations of costs and effects are difficult to carry out in such settings where maintaining standard procedures and holding variables constant is operationally difficult and may be seen as inconsistent with larger social goals.

Early in its planning some federal observers felt that the ETD was imbalanced in the direction of too large a scope and too much emphasis upon service delivery. It was hoped that the externally funded on-site evaluation planning team would help the FRMS staff to reduce the scope of the project effort to an evaluable size; this was explicitly stated in the Stanford contract but was found not to represent a consensus among all parties involved in planning the Demonstration. The evaluation planning team was not sufficiently influential to effect much change in project plans. The desired reduction in scope was achieved only at great cost later, after the visit of a site team from the National Institute of Education in mid-April, 1973.

While decisions must remain open about the relative merits of significantly large social experiments, which are difficult to evaluate, and small controlled experiments, which often lack major impact, a significant amount of information has been gained from this project.

Rationale

Every project has unique experiences and problems. If the experiences and problems of the ETD were all unique, the writing of history, analysis, and recommendations would be a pointless task. Fortunately, information has been compiled over the past ten years on a variety of projects whose problems and experiences either are mutual or are generalizable across related settings.

Some of the early experiences in planning for an Educational Technology Demonstration in the Rocky Mountain region can be examined in the light of other projects. We have chosen to compare the ETD with three other innovative instructional media projects: one in El Salvador (Schramm et al, 1970; Mayo & Mayo, 1971), one in Colombia (Comstock and Maccoby, 1966; Comstock et al, 1966), and one in American Samoa (Nelson, 1970). These three projects and the FRMS Project have planning, developmental, and operational implications for both policy making and direct implementation of future similar projects.

The theme of the first group of recommendations is the expectations between project and funding agency and within agency and project. Other recommendations deal with continuing relationships as the project grows and matures. Intra-agency perspectives are examined in the context of the way these may affect the project. Still other recommendations treat operational considerations.

Insuring That Expectations Match: The Grantee and the Funding Agency

Recommendation 1: Before significant funds are expended, the Grantee and the funding agency must agree on the goals and objectives of the project, the procedures to be used, level of funding, developmental and implementational procedures, and methods for arbitrating differences of opinion that may develop during the project.

Recommendation 2: To the extent possible, the grant or contract documents should reflect the initial expectations of all individual and organizational parties involved in the grant negotiations.

Recommendation 3: In order to maintain support, project staff must be able to demonstrate that ideas are clear, that the undertaking is financially possible in a fixed time frame, and that the results will contribute to the solution of the problem for which the project was conceived.

The FRMS Project

Background

The President of the Federation of Rocky Mountain States was the first project director for the Educational Technology Demonstration. He assumed the position with the understanding that he would serve in that capacity until he could identify a full time executive. By January of 1972, operational responsibilities were delegated to four component directors: one for Broadcasting and Engineering, one for Utilization, one for Career Development, and one for Early Childhood. The Early Childhood component was a subcontract operated by the Education Commission of the States but residing on-site as an integral part of the Project. The other components were comprised of Federation employees. The four Component Directors had nominally equal responsibility and authority. More complete background information may be found in Chapters I-IV in this Report.

Early Expectations

A major problem with the early phases of the FRMS ETD was that the expectations of the funding agency, NASA, and those of the FRMS project initiators did not match. Goals and funding were subjects of continuing disagreement (discussed in detail later in this paper).

Policy makers in the funding agency and in other cooperating agencies originally conceived the FRMS ETD to be a somewhat limited demonstration of the way satellite technology can be applied to educational problems. It was also considered important that some allocation of frequency on the ATS-F satellite be made for social purposes in addition to the technical, scientific purposes that satellites were

already fulfilling (71/06/02, 02A, 02B). Federal policy makers did not envision, as did FRMS staff, development of numerous hours of courseware, or the establishment of extensive broadcasting, engineering, or production facilities in the Rocky Mountain region.

The Education Commission of the States subcontract component for Early Childhood Development programming had a director and a number of staff members by February 1972. According to (72/02/24), from the Acting Director of the National Center for Educational Technology, to the Deputy Commissioner for Renewal, ECS was given the responsibility for initial planning of the Demonstration. Staff from FRMS Components also wished to influence plans. In reality, planning progressed as a large-scale, and somewhat fragmented activity. The Early Childhood Component, as a result of its charge, exercised considerable influence on the plans and on the manner in which the planning funds were expended during the second planning grant. At this early time, a pattern of component-centered rather than project-centered activity developed. This pattern seriously damaged the project in the funding agencies' view. There were separate attempts, for example, to include field services, research, and evaluation in the activities of the Early Childhood, the Career Development, and the Utilization Components. These separate component activities were not coordinated across the project. Although the redundancy of these efforts was due in part to poor coordination and communication, it appears that it reflected also the desire of individual components to dominate as many functions as possible, thus increasing the importance of that component. A feature of this activity was that many staff were hired too early in the planning phase for the Project.

Mismatches Concerning Funds and Scope

During the planning and early operations periods, the funding agency made many requests for the ETD staff to rewrite proposals and to shift project emphases (71/10/07, 72/07/07, 72/12/15B, 73/01/08, 73/02/27, 73/04/19D, 73/06/01B). These requests were based upon a number of factors: (1) FRMS proposals were judged by reviewers not to be adequate planning documents. (2) There was an unresolved mismatch in expectations between project personnel and the funding agency. (3) Some agency personnel felt that the project was spending or would spend more than could be justified by the expected return of either information or delivery of services And, (4) some agency personnel felt that the project staff could not spend the requested funds competently in the available time. Additionally, as a result of federal reorganizations and of budget impoundments by

the White House, there were immediate pressures and constraints on money. Document (72/12/15B) from the Federal ETD Project Co-Monitor to FRMS Managements, says, "...there is obviously not $12,000,000 available to cover such materials development... a decision will probably have to be made to reduce this figure..." From (72/12/18), "The projected budget for FY 1974 should be re-estimated. The figure of $6.5 million that you requested does not appear reasonable."

Further strengthening the funding agencies' view that FRMS staff were attempting to accomplish too much within a short period of time, Document (73/04/19D) says, "...the staffing and planning of the production component are inadequate to the task of producing 200 hours of programming in the required time frame of 12 months."

Production was only one of the continuing points of contention, although it is the most outstanding substantive issue. Others concerned the adequacy of planning in its entirety.

Goals and Objectives

The FRMS project staff had considerable difficulty in clearly stating their goals, objectives, and procedures. The following excerpts from document (72/07/05B) from a NCET staff member, transmitted through the Acting Associate Commissioner, NCET, to the Associate Commissioner for Educational Technology exemplify the result of this difficulty:

> "...After reading some 300 pages of material, I find myself unable to comprehend, with any clarity, the objectives to be met; the programs which will be created to meet them...Too often, the mere assertion that something will be so, is offered as a substitute for a delineation of how the asserted result is to be achieved. The report does not address itself to the expected impact, effects, or benefits of these programs, in terms of the defined needs." "There is no indication of how the sizeable investments in materials collection and production will be used after the satellite experiment has ended."

Federal reactions of this type demonstrate the extent of problems that can result from failure to agree at the outset on what is to be done and how.

Patterns

As a result of the lack of an original consensus on Project goals and objectives, an unfortunate "game pattern" became established early: The Project personnel would

write a proposal for costly, large scale experimentation and delivery of social services; in response the federal personnel would ask them to justify the costs, explain scheduling, provide plans for programming, or make a new proposal. The Project personnel would then respond either with an elaborate justification for their requests or with a new costly proposal. The federal personnel responded to these efforts by again asking for justification of costs, explanation of schedules, plans for programming, and so forth.

As was discussed earlier, Project efforts suffered because separate Components attempted to define independently the universe of utilization, content development, experimentation, and service delivery. These attempts made the Project budgets unjustifiably large. Furthermore, they were not coordinated with one another, so that different sections of FRMS proposals said different things about what looked to reviewers like the same activities.

We conclude that the multiple director operational procedure (four Components, each with its own Director) did not work as well as might be hoped. There are at least three possible explanations for this lack of success: First, it may have been simply the personalities and competencies of the individuals chosen for the director positions. Second, the directors were not well acquainted at the start and had not worked together previously. Third, the organizational structure encouraged each director to establish an independent sphere of influence.

Proposals

For whatever reasons, (and some may be derived from the above discussion), the Project did not prepare good reports and proposals. They suffered from several flaws: 1) Too large and too costly an effort was proposed for the length of time available in which to prepare for it. 2) As a result of the lack of coordination between Components, budgets were large. To at least some of the federal personnel the budgets even seemed "padded." 3) Although each proposal was very long and gave activities of Project personnel in detail, critical elements about operations, procedures, schedules, and plans were left unstated. This last practice was often justified in personal communications to the Stanford personnel from the Project staff by the notion that if concrete plans were stated the Project would then be held to them unreasonably by the funding agency. In fact, it seemed to many observers that the Project staff either did not have clear plans or did not know how to write a reasonable proposal.

Document (71/10/07) from the Associate Commissioner, Bureau of Libraries and Educational Technology to the Commissioner of Education, says:

> "The key fact that ATS-F will be able to serve the Rockies for less than a year and is only an experimental satellite has been largely overlooked in the proposal. Instead of testing, experiments and demonstrations, the proposal is devoted to a sizeable software production effort. Consequently, one of the key reasons for ATS-F, is that it will build knowledge which could in 10 years lead to a multi-channel satellite for educational usage, has been largely neglected.
>
> "Secondly, the proposal does not make adequate use of the special capabilities of satellites. Nearly all of the programs suggested could just as well be shown via the existing public television and cable systems. Projects in which the satellite is cost effective, such as reaching the large isolated and migrant populations of the area, need far more emphasis.
>
> "Moreover, the proposal does not explicitly consider some of the interesting technical experiments, such as interactive learning, that should be tested using a satellite." (A more detailed critique of the proposal is appended).

Document (72/07/07B) nearly a year later than that quoted above, addressed to the President of FRMS from the Acting Associate Commissioner, NCET, says:

> "I. General Concerns
>
> "Purpose, goals, and objectives. The overall purpose of the project is unclear in terms of goals and objectives. Review results indicated uncertainty as to not only project goals and objectives, but to specific component objectives and tasks.
>
> "Time schedule. Because of the time constraints imposed by the launching of the spacecraft, and because of the massive undertaking the Federation has proposed, a time schedule or PERT chart should be carefully developed for each component and for the total project management. The schedule should be realistic in terms of necessary training, production, and prototype testing, but should allow the flexibility needed for component areas to develop quality programs.

"Report format. It was extremely difficult to follow each section in an overview due to the variance in component reporting. An Outline for the entire report should be developed that would serve as a guide for each component section.

"Decision-making. Although decisions which were made during the planning process were presented, no clear discussion of either the sources of information upon which the decisions were made, or the reasons behind why and how the decisions were arrived at is apparent in the report. This concern is particularly crucial if critical decisions have been made concerning the various constituencies to be served and those constituencies have not been consulted during the decision-making process.

"In line with the above, supportive data for the decisions made would also give credibility to the needs and thus to the programs proposed to meet those needs."

Document (72/08/07D) from a Field Reader of the FRMS 28 July 1972 Report and Proposal to the FRMS Project Officer says:

"...There are no specific programs of instruction described and most of the space in the report is taken up with long boring descriptions of the bureautic structure of the project (i.e., Utilization Component, Early Childhood Component, Career Education Component, etc.).

Document (72/08/22) from the Acting Director, Division of Technology Development (DTD) to the Acting Associate Commissioner, NCET, concerning the same FRMS report, says:

"As with their previous submission, this document contains a great deal of verbiage and little content. I am certain that they could have presented their ideas--and done so more effectively--in one tenth of the space. After reading the document, it still is not clear to me why they are doing what they are doing. They have not yet built the case for the need for early childhood and for career education--other than assuming that they are needed--nor have they shown how their approaches will alleviate existing problems in the Rocky Mountain region.

"In addition, although this is an educational and not a technical experiment, I do not see the need for a satellite. In short, I can not determine from their document what they wish to experiment with or what they hope to achieve as a result of an experiment."

Document (72/08/23B) from the Acting Deputy Director, DTD, to the Acting Associate Commissioner, NCET, says:

> "The proposal suffers from the lack of a statement of who is to do what, delivered how, to whom, for what reasons, to reach what results, under which conditions, for how much. Without such information it is difficult to understand on what basis one would fund a continuation effort. It might be more practical to fund the opportunity for the contractor to state in explicit terms just what is to be done and with what level of commitment from whom."

Document (72/08/25C) from a staff member in the Office of Program Planning and Evaluation to the Acting Associate Commissioner, and a Staff Member, NCET, says:

> "...Although this document represents a substantial improvement over the previous version, it does not, in my opinion, provide an adequate basis for further funding.
>
> "...Apparently there are no specific goals and objectives identified for the Demonstration. These are absolutely necessary so that all of us, including tax payers, can understand why the Federal government is investing more than $20 million in this project. The overall goals are also necessary in order to impose some discipline on the remainder of the project. At present there is little or no relationship among the objectives specified for Early Childhood, Career Development, Utilization, etc. If some specific goals and objectives had been set for the entire Demonstration, there would at least be greater coherence among the parts."

In commenting about the problem with coordination of efforts, Document (72/07/07) to the President of FRMS from the Acting Associate Commissioner of NCET, says:

> "Although the document [FRMS' 25 June 1972 Report and Proposal] presents utilization as the coordinating component of the project, each component section [of the proposal] speaks to such tasks as training, field services, research and evaluation. Not only would this appear to dilute the effort of the utilization component, but more importantly appears to necessitate excessive staff support if each area would require trainers, researchers, evaluators, etc. ...it is unclear why the early childhood development and career development sections address evaluation apart from the Stanford responsibility. This would clearly seem a duplication of effort and expense. ...Seldom do the individual sections identify how they relate to each other, i.e., utilization to early childhood, broadcast to career education. ...Information

Gathering and Dissemination should be a separate component or part of Utilization. Why one for CEC and FCD? Ditto for Field Services. Research and Development should be a project wide effort and not imbedded as sub-sets of each cluster. Much common data collection, etc.!"

General Discussion

Mismatches between the funding agency and the project initiators are likely to occur at the conceptual stage of any project. Many of these mismatches may not become apparent during initial negotiations unless all parties make their positions clear. It is necessary to clarify positions initially, since tacit expectations remain sources of potential confrontation at later times in the project life--when there is the risk that it cannot survive them. Initial positions are often difficult to clarify because inter and intra organizational patterns of communication have not been established, and rules for establishing patterns of communication are not clear. In addition, some individuals or agencies may have reasons for restricting communications--hoping by this means to gain some advantage in future negotiations or operations. Nevertheless, clear communicaion is required.

Developing and sustaining communication networks to insure appropriate and adequate information flows for planning purposes is one of the most important steps in management. Glock (1961) has written about some of the conditions necessary to obtain and apply social research. He says, "The importance of effective internal communication in this regard cannot be exaggerated."

Insuring that Expectations Match: Interagency Relationships

Recommendation 4: The grant or contract documents should reflect agreement between the policy and operational levels of the funding agency, both of which should be involved in the ongoing monitoring and operation of the project.

The FRMS Project

There were varying pressures on the project as a result of policy, administrative, and personnel changes within DHEW, NASA, and CPB. By June of 1971, agreement to pursue a series of demonstration experiments to "...test various educational and health applications of communication satellites" (NASA News Release No: 71-105; (71/06/11), had been made among NASA (71/06/14A, B), HEW (71/06/02, 02A, 02B), and CPB (71/06/02B, 71/06/14B).

However, early in 1973, the Secretary of HEW was moved from his post to that of Secretary of Defense, and in August 1972, the President of the Corporation for Public Broadcasting resigned. These changes, which had nothing originally to do with the FRMS ETD, had a significant effect upon the later fortunes of the project, since they removed to other positions two interested parties of a high policy level.

General Discussion

An example of problems occuring from lack of communication between policy and agency is cited by Glock, who notes that several agencies funded social research during World War II, but there is little practical effect of this research. He explains the failure as partly owing to the fact that "...within these agencies, an effective relationship between the monitoring staff and the policy makers was rarely established." Apparently, after the initial requirements were established, the monitor usually did not hear from the policy maker until the final report was submitted. By then, "The results were seldom closely related to the requirements, and implementation could be accomplished only infrequently on the basis of the final report alone."

The recommendation to clarify initial expectations is important because during the life of any project conflicts can develop within or among the policy or operations parts of the funding agency. Furthermore, when the funding agency is governmental (especially federal), changes in administrations can bring about profound changes in policy and agency behavior that can complicate situations and relationships that were once fairly simple and straightforward.

Funding and Arrangements

Recommendation 5: Once goals and objectives are agreed upon between agency and project, the original grant or contract agreement should make certain that projects are sustained long enough to insure "...that the program as a whole does not suffer from the pressures on all discretionary programs to shift foci to reflect the apparent priorities of the moment." (NCERD, 1969)

Recommendation 6: Government sponsored projects (and others similar) would ideally be funded on a project basis, based on a well articulated, mutually agreed-upon proposal or work statement. Major milestone objectives would be set for review at reasonable times. Multiyear projects could operate under these criteria, with an overall general project review being scheduled to take place once each year.

The FRMS Project

History of Funding

Document 72/02/24 from the Acting Director NCET to the Deputy Commissioner for Renewal details FRMS funding and negotiations up to 24 February 1972:

> "On June 8, 1971, a contract was let to the Federation of Rocky Mountain States, Inc. to develop a series of planning documents which would describe requirements for the use of a satellite in the Rocky Mountain region. The contract was awarded for $35,678 under Cooperative Research discretionary funds and covered the period May 1 to September 30, 1971. As a result of this contract, the Federation submitted a proposal for an educational satellite demonstration for $26,284,627.
>
> "A supplemental contract was awarded on October 1 to the Federation for $21,808 and covered the period to November 30, 1971. This supplemental funding allowed the Federation to continue its plans for the development of an organizational structure and to modify and re-structure the proposed demonstration.
>
> "In October, Commissioner Marland met with rerpesentatives from the Federation and its sub-contractors, the Education Commission of the States (ECS) and the Western Interstate Commission for Higher Education (WICHE), the Deputy Commissioner for Development, and representatives from the Bureau of Libraries and Educational Technology/ Division of Educational Technology. The purpose of this meeting was to discuss the project and its scope of work. At this time, a commitment for $5 million, FY'73 funds, was made to the Federation by Commissioner Marland to carry out the demonstration.
>
> "In December, Arthur D. Little, Inc. prepared a document under the direction of the Office of Telecommunications Policy/HEW, with the cooperation of the Federation, outlining the basic plans for the health and education components of the demonstration. Recommendations for time allocations for the Rocky Mountain and Appalachian regions and the State of Alaska were also included. This document was submitted to NASA under the signature of the Secretary of DHEW and the President of the Corporation for Public Broadcasting.
>
> "On February 1, a contract was signed for $500,000 and awarded to the Federation, with a sub-contract to ECS, to develop the operational plans for the educational satellite demonstration. This contract covers the period from January 1 to August 1, 1972."

We note that FRMS Planners consistently requested funding that was significantly larger than any of the funding agencies planning documents indicated was desirable or even available. Because the original arrangements for scope and level of funding for the Project were not agreed upon, the ETD record contains many documents relating to attempts to establish levels of funding and attempts to secure funds that Project staff felt had been "promised" but, for example, not approved by the Congress or not released by the agency in charge of the Project. Document (71/10/05B) from the Assistant Secretary for Planning and Evaluation, DHEW, to the Commissioner of Education, says:

> "4. The general budget figure for this experiment from HEW and OE as well as such other Federal agencies as may desire to participate should be a minimum of $6 million to insure that we achieve our experimental objectives and have a creditable project.
>
> "...It is proposed that the $5 million for the software development come from the Educational R&D, Libraries and Educational Technology budget. As you know, the Secretary will be sending to OMB a request for additional funds for Libraries and Educational Technology... At this time, of course, we have no assurance that OMB--and later the Congress--will approve this increased funding. If they should not allow these additional funds, we would like to have an understanding with you that $5 million for the satellite experiment be made available from whatever R&D funds are finally approved for OE."

Document (71/10/07) from the Associate Commissioner, Bureau of Libraries and Educational Technology to the Commissioner of Education reflects the initial disagreement between DHEW (as represented by (71/10/05B) above) and FRMS. The Document says, in part:

> "...The Federation of Rocky Mountain States, in conjunction with the Education Commission of the States and with the Western Interstate Commission for Higher Education (WICHE), has suggested a $26 million effort that places prime emphasis on the development of TV programming software to be used in a satellite experiment."

The memo expressed dissatisfaction with the joint proposal (as quoted on page 55 of this paper). Owing to this dissatisfaction, the federal agency staff proposed an alternative effort to the one given in the FRMS proposal. The federally-proposed alternative is discussed, continuing with (71/10/07), as follows:

"The outlined experiment will cost about $6 million over three years as follows:

$3 million for in-school and preschool software

$1.5 million for 500 ground receivers, 10,000 student interactive terminals, and other hardware

$1.5 million for administration, broadcast and engineering, utilization, research and evaluation.

To fund this, it is suggested that USOE fund $1.5 million, other Government agencies fund $1.5 million, and the Rocky Mountain region match the Federal contribution by funding $3 million. The U.S. Office of Education's contribution would then be $500,000 a year for three years."

The memo (71/10/07) ends with a formal request to the Commissioner:

"It is requested that you set aside $500,000 per year toward to cost of this project to be effective whenever agreements between the parties involved have been reached."

Document (72/04/04) from the Secretary, HEW to a member of the White House Domestic Council, says:

"The planning stage of this project began on January 1, 1972 and is scheduled for completion on August 1 of this year. The Office of Education has awarded $500,000 for this effort and *plans further funding of $5 million for the developmental and operational phases.*"[6]

Document (72/06/23) from the Acting Associate Deputy Commissioner for Renewal, Office of Education, to the President of FRMS says,

"This will confirm your conversation with the Commissioner as to the support of the Rocky Mountain Educational Technology Demonstration project during the initial months of Fiscal Year 1973.

"Our present expectation is that the Congress will pass a continuing resolution for the initial funding of the Office of Education's programs in Fiscal Year 1973. We intend to support the Rocky Mountain project on a

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6. Our italics.

month-to-month basis by continuing the funding of the Fiscal Year 1972 planning grant under the continuing resolution. This support will begin as of July 1, 1972.

"Once the Congress has passed the full Fiscal Year 1973 appropriation for the Office of Education, we hope, subject to mutual agreement on a satisfactory plan, to provide approximately *$5 million for this project in Fiscal Year 1973.*"[2]

Nevertheless, that FRMS proposal still appeared lacking to many reviewers. For example, Document (72/08/25C) from a staff member in the Office of Program Planning and Evaluation to the Acting Associate Commissioner, and a Staff Member, NCET, says:

"...It is my understanding that this document represents the basis for funding the Demonstration's production phase which would last approximately one year and cost about $5 million, although this is not explicitly stated. Although this document represents a substantial improvement over the previous version, it does not, in my opinion, provide an adequate basis for further funding."

As was stated earlier, there were changes in the monitoring of the FRMS Project and in the agency responsible for it. Document (72/12/18) to the President of FRMS from the Director of the Division of Technology Development reflects a continuing disagreement about funding for the project:

"1. The projected budget for FY 1974 should be re-estimated. The figure of $6.5 million that you requested does not appear reasonable and does not reflect earlier discussions with FRMS. Although the Office of Education can make no commitment to a firm budget figure at this time, for planning purposes, you should develop the FY 1974 budget based on the same total sums as available in FY 1973. That is, plan on $750,000 being available for the Broadcast and Engineering activities, and $3.2 million being available for the remainder of your activities, including Early Childhood and Career Development content development, Production, Utilization, and other areas of expenditure *necessary for the completion of the project.*"[7]

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7. Our italics.

This letter, written 6 months after (72/06/23) and 8 months after (72/04/04) (both quoted above, page 15) reflects considerable deviation in intention from that expressed by original policy planners. Reasons for this have already been discussed, but reviewed here, they include: 1) FRMS requests for even larger sums of money than originally planned by policy makers. 2) Criticism of FRMS Proposals and Plans by reviewers. 3) Non-coordination and non-cooperation within FRMS activities. 4) Changes in position of high-level Federal personnel. 5) Constraints on federal funds, engendered by a long delay in obtaining a signed federal budget.

Mismatches between the FRMS Project and its federal monitors in planning and attainment of goals, objectives, and project milestones continued. Document (73/01/08) to the President of FRMS from the Director, Division of Technology Development, says:

> "We were pleased to learn that your staff is hard at work developing answers to the questions that were posed in my letter to you of December 19, [we believe this is (71/12/18), quoted above] and to the points raised [in the] addendum of December 20. All future OE support is contingent upon satisfactory answers to these questions. While there is a payment of $700,000 that is now being processed as part of the FY 1973 grant, all other payments and requests, including the recent request for the production equipment, will be held pending the resolution of the questions. We are pleased that you will have a draft of your response to us by January 15.
>
> "As you develop your response, you will be making many very basic assumptions about the direction that the project will take. These will have significant effects on your FY 1973 and FY 1974 budgets. It, therefore, is expected that part of your submission will be revised budgets for these two years. As you develop the budgets, it will be helpful to tie your project expenditures to specific products, objectives, and/or tasks. This will allow everyone to ascertain your progress in terms of your expenditures."

Goals of the FRMS staff and the funding agency continued to differ. For example, Document (72/07/07) to the President of FRMS from the Acting Associate Commissioner of NCET, says:

> "The expense of production would prohibit extensive development of programming, much less allow for quality products....
>
> "The complexity of establishing a ground system for the demonstration would appear to prohibit the use of staff time and resources for production purposes. For

this reason, the Federation should give serious consideration to the availability of existing production facilities within public broadcast stations in the Region."

As it became more certain that agency responsibility for the project would change from Office of Education (in early 1973 the OE National Center for Educational Technology) to the new National Institute of Education, the agency appears to have become increasingly apprehensive about the continuing disagreements with the FRMS Project on questions of size, scope, goals and objectives, and funding. Document (73/02/27) from the NCET Grants Officer, the Director of the Division of Technology Development, and a staff Program Specialist reflects action taken in the federal agency as a result of this apprehension. Sections pertinent to funding are quoted here:

"After considerable discussion among the NCET and OE staffs, thorough review of the reports of the NCET consultants, and thoughtful evaluation of the FRMS reports and of your requests for an in-house production facility, we have decided that a change is required in the scope of the Rocky Mountain ATS-F Educational Technology Demonstration. This change is a direct reflection of what NCET believes needs to be included in an experiment that is intended primarily to demonstrate the cost effective delivery of technology-based, educational courseware to relatively small numbers of television-isolated persons, who may only be reached through a satellite.

"...It follows from such a re-examination of purpose, that it is not possible to justify an expenditure of several millions of dollars for the creation and production of materials intended to serve the numbers of persons estimated to be reached via the ATS-F satellite in the Rocky Mountain Region. Further, even if this magnitude of expenditure was approved for the creation of video courseware, with the intent that this material later could receive national distribution and exposure, NCET would be forced to conclude that FRMS probably could not produce the materials with the high quality and in the quantities necessary to justify this magnitude of expenditure. This conclusion is based on the time constraints, the mix and competence of the FRMS staff, the facility situations, and FRMS management coordination problems.

"Therefore, this is to inform you that, beginning immediately, all on-going activity not consonant with the changes spelled out below must cease, and that an intensive planning effort which reflects these changes is to commence.

"5. Funds for the activities under the "Broadcast and Engineering" component, since they are provided under separate contract with the HEW Office of the Secretary, are not affected by this change. Budgets for both Utilization and Administration will be re-examined. *A total of $2,000,000 for production of courseware, including production facilities and staffing, and further content development will be the maximum funding allowed for all such activities during the remainder of the project, beginning immediately and extending through the end of FY 1975.*[8]

"9. Based on the above, you should immediately take steps to minimize expenditures not related to this new effort, and should terminate all unrelated and unnecessary subcontracts and orders...

"11. FRMS should prepare a technical proposal with budgetary support for this changed effort, to cover the remainder of FY 1973 and FY 1974. The subject proposal and budget support should be submitted to NCET/OE in two separate parts, one to cover the remainder of FY 1973, and the other for FY 1974. In addition, FRMS should also submit separately a preliminary plan and budget for FY 1975. The subject proposals and budget materials are required to be submitted to the Office of Education for review, approval or disapproval, by April 2, 1973."

This action was strong. In addition to the disagreement with FRMS, it underlined a policy conflict between the OE Agency and DHEW itself, concerning how directive an approach to DHEW funded projects the monitoring agency should take.

Document (73/04/06) from the Grants Officer, the Director of the Division of Technology Development and the Program Specialist, to the President of FRMS, reflects the continuing discussion:

"While these documents covered the same points requested in our letter, we find after careful review that they present more of an alternative plan rather than a response to the outlined requirements. We would be pleased to review and discuss any alternative suggestions you may have, however, it still is necessary for FRMS to respond to all points in the letter of February 27.

8. Our italics.

"One of the major points that we wish to call again to your attention is the requirement for FRMS to present a plan for the production of courseware and for the content development, within a maximum funding limit of approximately $2 million for all such activities during the remainder of the project, beginning February 27, 1973 and extending through the end of FY 1975.

"You have stated on several occasions that you would like OE/NCET to present a plan for those activities within the $2 million limit. While we believe that there are several ways that this can be done and urge you to develop your own plans, we are enclosing one suggested budget. It should be emphasized that we are not stating that you must accept this approach, but only suggesting this as one idea that you can modify, within the $2 million limit, to fit your needs and desires.

"It may be helpful for FRMS to understand the normal relationship that exists between the Office of Education and its grantees. It is the Office of Education's responsibility to set funding levels and to specify the general parameters for all projects that it supports. The grantee, in turn, is responsible to supply the specific project objectives, and the methods and procedures to be used to achieve those objectives, subject to the technical review and approval by the Office of Education."

Funding-Related Results of Site Team Visit

As a result of the recommendations which were based on the results of 12 April site visit by a team from NIE, made in Document (73/04/24) (from the Director, Division of Technology Development to the Associate Commissioner for Educational Technology) the Early Childhood Component was eliminated from the FRMS Project. That document says, in part:

"5. The Early Childhood effort should be totally changed. The present sub-contract with Education Commission of the States should be cancelled and all of the present development efforts terminated. Instead, the Early Childhood effort should be restructured to provide remote audiences with programs such as Sesame Street, Electric Company, and BC/TV."

Document (73/05/03) continues the discussion between the Director, Division of Technology Development, the ETD Project Co-Officer, and the Associate Commissioner for Educational Technology. It says:

> "As you will note, we estimate the total 2 year cost of the project to be slightly less than $2,300,000."

Document (73/06/01A), from the Director, Division of Technology Development, through the Associate Commissioner for Educational Technology, to the Deputy Director for the National Institute of Education, says:

> "3. Negotiations between the OE/NIE team and a three-man FRMS group, headed by [the new FRMS Project Director], will begin on Tuesday, June 5, in Washington. It is expected that the negotiations will continue for several days until both teams agree upon a common technical and budgetary position. A major point of consideration will be to complete all negotiations and contract proceedings in sufficient time to reprogram the $1,740,000 of OE funds still not released to FRMS under their present contract, and the approximately $500,000 of OE funds that has been transferred to the Office of the Secretary for this experiment."

Document (73/06/01B), from the Director, Division of Technology Development to the Group Director, Technological Innovation in Education and to the Director, Office of Telecommunications, says:

> [The FRMS Project Director] "...further asked if the total funds contemplated are about $6,000,000 for FY 1974 and FY 1975. I responded that the funds for the remainder of the project, beginning immediately and continuing through June 1975, would be substantially less than $6,000,000, but I did not discuss a particular budget figure.
>
> "15. It is essential that we arrive at a technical and fiscal understanding as soon as possible. This is essential if we are to reprogram the FY '73 monies."

It should be obvious that most of the responsibility for project implementation should lie with the contractor or grantee or the project should not take place. Only in cases of extreme deviation from the original consensus and plans should the funding agency interfere in a directive manner. In the case of the FRMS Project the absence of a pre-funding and pre-hiring agreement on goals and scope made possible the continuing destructive dialogue between FRMS Planners and funding agency personnel.

There was (and is) strong political support for the Project in the Rocky Mountain region. Therefore, regardless of the difficulties at the federal level, the Project continued to be funded and "kept alive" somewhat unevenly, until late in 1973, when somewhat firmer funding guidelines were established.

General Discussion

As long as funded activities are meeting agreed-upon goals and objectives, implementation of project-based (rather than fiscal based) funding might buffer worthy projects from the effects of decision making that is affected by political considerations and changes.

While large projects are likely to be cooperative endeavors, responsibilities must be well defined. The funding agency will usually decide which responsibilities for major project activities will lie with the funding agency and which will be with the on-site project personnel.

For projects of large scale or scope, decisions about operational procedures and personnel should be made by the grantee with agreement on major points from the funding agency. The funding agency should review operational procedures to insure that they reflect sound management practices and will be workable in the context of the project. These procedures should be included as part of the original grant agreement discussed in the first recommendation.

When the contractor or grantee does not have the complete confidence of the funding agency, the original scope of the project can be small, or can be staged with definite evaluational milestones occurring during early phases. Mutually satisfactory changes can then be made in the original grant document if there is a desire to revise or enlarge the scope of the project.

Planning and Operational Considerations

Recommendation 7: Overall planning, fund negotiations, "needs" surveys, and operationalization of policy should be completed by a small team composed of applicant agency personnel, ideally with the support and assistance of policymakers or funding agency personnel as well.

Recommendation 8: All early steps should be complete before a large effort is launched, numerous staff hired, or large amounts of funding committed.

Recommendation 9: Avoid having a commitment to planning act as a psychological lever, preventing progress that could take place, by too rigidly defining which are properly "planning" tasks and which are not.

Recommendation 10: Any attempt to incorporate the ideas of the "population as a whole" or of any interest groups ("needs surveys," e.g.) should be initiated during the preplanning stages of the project.

Recommendation 11: As early as possible, research planners should be involved with setting objectives. They should create measurement instruments, make certain that procedures, samples, and field procedures will meet research, project, and evaluation objectives.

Recommendation 12: Detailed project-wide objectives consistent with grant agreements should be written. Objectives should be defined for field procedures, hardware and software, and management, as well as for programs and for instructional, or "treatment" variables.

Recommendation 13: An attempt should be made to spell out programming or instructional, or "treatment" objectives in very fine detail, and to develop measurement instruments in coordination with setting objectives as one of the first steps in planning, to be taken in parallel with such activities as milestone charting, budgeting, and initial contacts with cooperating or relating agencies.

Recommendation 14: Make baseline measures of pre-project conditions. Such measures provide information that is too important to overlook.

The FRMS Project

The FRMS staff grew quickly. Instead of a small initial planning team, there was a moderately large, newly hired staff, many of whom participated to some extent in preparing the planning and proposals documents. This large scale operation without well-coordinated leadership probably contributed to the lack of a cohesive, well-coordinated plan that would indicate cooperation within the entire project to the proposal reviewers.

If goals, plans, and methods are agreed upon early, it may be possible to avert the development of within-project factions. These, if allowed to proceed unchecked, can pull the project apart from within, as well as cause conflicts to develop between the project and the funding agency. Furthermore, strong internal factions can cause the project to have a schizophrenic image, making it nearly impossible to deal satisfactorily with persons and agencies with whom the project must relate or interface in order to accomplish its mission.

Because of a perceived need to hurry, which contributed to the hiring of the large initial staff, the project was caught in the dilemma of being both planning and to a certain extent operational. One example of this can be seen in the attempt to design "user based programming". The FRMS Demonstration expressed commitment to programming based on "user needs" but the results of the early planning did not provide either a clear theory structure or a firmly data-based definition of what "user needs" might be. (72/08/25C) says, "...it is difficult to understand why they are still 'identifying needs of the intended audiences' as they go into the actual production phase." Document (72/10/20) says, "With regard to lack of regional minority group target population planning inputs, this submission lacks even the unbacked-up assertions regarding such which appeared in the previous document." Document (72/10/22) from the funding agency states, "There is inadequate indication of purposeful and substantial involvement of user groups in the planning and developmental processes and of projected continued involvement."

The Federation reply (72/10/31) identified approximately 10 activities that the FRMS staff considered part of "needs assessment." However, these activities did not match the funding agency's idea of what "user needs assessment" might be. It is not the purpose here to pass judgment on the adequacy of the activity, but rather to say that there was a considerable mismatch between the ideas of the funding agency and the operationalization of the project.

Appropriate early planning within the framework of the first recommendation could have avoided many of these problems. The entire goal and objectives setting operation, development of instruments, and planning in general depend upon results of any legitimate needs survey.

Many planning problems can be avoided if research and/or evaluation planners are involved with setting initial goals and objectives. They should create measurement instruments and make certain that populations, samples, and field procedures will meet research, project, and evaluation objectives. These details of planning help proposal reviewers estimate how well the planners know what they are going to do. The FRMS had only fragmented, component-based plans for data collection. The Stanford University evaluation planning team prepared on its own a draft data gathering system, in order to satisfy their contract provisions. The FRMS staff did not wish to prepare for data gathering at that time (January, 1973). Therefore, at the request of FRMS staff, the Stanford Interim Report on the Documentation System for the ETD was labeled "Draft." This "Draft System" was not used by FRMS or referred to thereafter in connection with the Project.

The FRMS ETD did not make early, systematic attempts to determine user needs and preferences. Baseline measures of pre-Demonstration conditions were not made. User needs and baseline measurements could have been and should have been coordinated. Baseline measures can often be made in the process of assessing "user needs," since the status of the projected target audience is one kind of data that may be used in determining what sort of materials and procedures would be most suitable.

Too many of the ETD's early resources were spent on hiring a large staff. Once the staff was hired, a significant proportion of Project efforts were expended in revising proposals and replying to funding agency requests and challenges. This money could have been better employed for data gathering and substantive planning.

General Discussion

Specification of detailed objectives early in planning can help to avoid situations in which planners state one set of goals and operationalizers implement quite a different set. Room should be left in the project for legitimate revisions of early plans and objectives. Revisions should be based on data that point definitely to specific things, not on unverified assumptions. Revisions for project improvement should be considered during regular evaluations, as discussed in Recommendation 6.

It takes a certain amount of time to develop valid and reliable measuring instruments. Therefore, instruments must be developed in coordination with setting objectives as one of the first steps in planning, to be taken in parallel with such activities as milestone charting. Baseline measures of pre-system conditions are extremely important. No amount of rhetoric can substitute for an adequate baseline measure when one is trying to compare the new system with the old. Making baseline measures is another compelling reason to state objectives and develop measuring instruments early in the planning period. If changes are needed as a result of unforseen developments or of natural evolution in the project, at least some evaluative data from earlier procedures and materials will be available. Almost every large scale project that has been conducted has lacked baseline measures. For example, in American Samoa, "...no system-wide measurements were made of the amount of learning that took place in the Samoan schools before the new educational plan was introduced in 1964...," (Nelson, 1970).

Personnel and Project Staffing

Recommendation 15: Obtain personnel of the highest quality. An already-established team can often function more efficiently than a newly-made team, and the schedule of the project should dictate to a certain extent whether or not it is reasonable to start up an entirely new team effort within the time available.

Recommendation 16: Obtain a strong project director or strong co-directing team. Strong, cooperative leadership is almost certainly essential to success.

Recommendation 17: Obtain personnel (especially those in high level or otherwise critical positions) who will commit themselves to serve overall project goals, not to develop within-project "factions", and to forsake personal commitments to "pet ideas," until project goals have been achieved.

Recommendation 18: Especially in developing nations and regions, it will usually better serve the nationalistic purposes, as well as the more altruistic purposes of upgrading the national or regional capability, to choose as project director a professional from among the citizens of that region or country. If the on-site officials or the funding agency feel that the region is lacking in qualified professionals, possibly a co-directorship could be arranged with the best qualified native professional being supported by a qualified professional from a different region or nationality.

The FRMS Project

The FRMS Project relied almost exclusively on newly-hired staff, although personal contacts were extensively relied upon for staffing. Many--through not all--staff in the ECS subcontract for content in Early Childhood Development had worked together before or were acquainted. This made it somewhat easier for that component to begin operations and to function as a team. Perhaps this established team feeling also contributed to the building of separate within-Component experiments, rather than to cooperation with the other, less-well-acquainted Project staff members.

In July of 1972, an Assistant Project Director was hired who was expected to coordinate the activities and make the project sail smoothly. The task was difficult in the situation where the independent operational styles and individual "component director" scheme was already well established. Antony Jay (1967) makes comments that appear pertinent to the situation:

> "What do you do if you inherit a corporation or division or department which is in a state of baronial war? ...The trouble is that you are likely to be on trial to some extent yourself, and if the barons who are divided in everything else are united on the fact that you are a menace, you are not likely to last long enough to realize the fruits of your firmness....In the early stages each baron is anxious to try out his strength, and some may be strong enough to think they could emerge as top baron and become king. Some even do, which creates quite a different situation."

In any case, (72/12/18) comments on some evidence of the remaining "separatism":

> "The assumptions which accompanied your budget submission of November 17, 1972, stated that approximately 180 hours of programming will be used during the demonstration. In our discussion with the staffs of the Early Childhood and Career Development components, their estimates for updduplicated programming add to 250-300 hours. Career Development spoke of about 160 hours of programming, while Early Childhood indicated that they would use more than 100 hours of new programming. This inconsistency must be clarified."

Document (73/02/26A) states:

> "I still don't know how 'utilization' relates to you [Career Development Component], or the Early Childhood Development Task Force. I read the information you so kindly gave me and came away feeling that the entire management system was burdensome. I hope I'm wrong."

Early in 1973, the funding agency began to request that a full-time Project Director be hired (73/01/08; 73/02/27).

It was not possible to appoint the Assistant Project Director to the post of Project Director because of a potential conflict of interest and because his professional skills were not in television and broadcasting. In May 1973 the Director of the Broadcasting and Engineering Component was appointed Project Director, and the project was almost completely restructured. It was decided to retain only the Career Development content; content personnel in that component would become part of the Production staff. Research and data processing would be divided and both would be internal in the project.

Memo (73/05/03) from the ETD Project Officer and Co-Project Officer to the Associate Commissioner for Educational Technology indicates the directions for the changes:

"1. Although this analysis indicates that the Broadcast and Engineering component of FRMS would be supported by a separate contract from HEW/OS, as is currently the case, we see no need for this in future. We suggest that Broadcast and Engineering be brought under a single contract to FRMS from OE/NIE. This would provide better coordination and management control by the FRMS Project Director--both internal coordination and management control have been serious FRMS shortcomings in the past. Any services that FRMS would provide to support the Alaska, Appalachia or health experiments would be arranged by direct contact between the appropriate groups and FRMS.

"2. OE/NIE should make a decision about the future of the project as soon as possible. If our recommendations are followed, the project staff would have to be reduced from its current size of about 70, to about 23 people at FRMS Headquarters. These people should be given as much time as possible to find new positions, particularly since some of them might be interested in academic posts.

"3. As soon as a decision is reached, FRMS should be required to develop a new set of plans, organizations, and budgets covering the period from the present to the end of the project in FY 1975. Until this is done, no additional funds should be released to FRMS, and we recommend that they be instructed to restrict current expenditures to a minimum."

As one outcome of the reorganization following the NIE site visit in April 1973, a three man team was appointed at the federal level to negotiate changes in funding for the Demonstration. This team included the Director of Telecommunications Policy at HEW, the group director of the Technological Innovations in Education for the National Science Foundation on assignment to the National Institute of Education, and the National Institute of Education staff member who had been the Demonstration's comonitor since 1972. At the regional level, the Governor of New Mexico and Chairman of the Board of Directors of the Federation appointed a three-man executive committee for the project consisting of the President of the FRMS, the Governor of Idaho, and the Superintendent of Public Instruction in New Mexico.

General Discussion

As was emphasized earlier, a project has a better chance of success if it has a strong director, competent staff, and involvement with both the local professional and lay populations.

The ETV project in Colombia (Comstock & Maccoby, 1966; Comstock, Maccoby & Comstock, 1966) had as Director a professional from the U.S., employed by the Peace Corps. He was responsible, along with other Peace Corps personnel, professionals from the United States, and some officials of the Colombian government and educational system, for developing the original goals, ideas, and plans. Such a director was an important factor in eliminating the thematic problem of translating policy into operational procedures. However, this arrangement was not without flaws, since it conflicted with Colombian and Peace Corps goals of having the project be as Colombian as possible.

The reports from the ETV project in Colombia note that utilization (field services) was a critical function for the project. In this context it is interesting that at the beginning of the project in 1964 there were no Colombians involved in the utilization function. Those workers were all Peace Corps volunteers. By the end of the Peace Corps' involvement in the project in 1966 there were thirteen Colombians performing utilization functions.

A lack of Colombians in the early stages of the ETV project is not a direct reflection of paternalism from the Peace Corps; rather it is an index of the lack of commitment of the Colombian government as a whole to the ETV project at the beginning of its operation. The report says,

> "At the top levels talented and skilled people are doubtful about risking their careers--either by decisive support or acceptance of active roles in the new undertaking. Major agencies of government give no more than tacit support. The project is left on its own until it proves itself. At lower levels people wonder about the permanence of any jobs offered, and give preference to alternatives." (p. 54)

Such hopes and fears affect any innovative project. Policies of year-to-year fiscal funding further aggravate the problems of obtaining high-quality professionals. Appeals must be made to the pioneering and risk-taking instincts of well-established professionals, and if the job market is very free it may be necessary to offer slightly higher salaries in order to induce top-grade people to become project staff members.

To some extent the decision of the Colombian government to delay any major commitment to the ETV project forced the planners and policy makers to be their own early operationalizers. Thus the persons performing the critical utilization function during the formative stages of the project were more closely connected to the policy level than were the Colombians who later supplanted the volunteers. Such close connections

between policy makers and implementers are not usual in large projects, and while serving both functions increases the burdens on the policy makers at this stage, it virtually eliminates the problems of garbled communication between the policy maker and the implementing personnel that occurs when different people are working at different levels at the same stage of the project.

Regardless of the management cooperational structure of a project, an already-established team can often function more efficiently than a newly-made team. Consideration should be given to that efficiency when a new project is being contemplated, since staffing and training of a new team may be necessary. The schedule of the project should dictate to a certain extent whether or not it is reasonable to start up an entirely new team effort within the time available.

A top-quality supporting staff is needed to implement the ideas spelled out in a planning consensus. Failures to meet milestone objectives can occur as a result of either a deficiency in the conception of the project, a deficiency in the operationalization of the plans, or a deficiency in the personnel or subcontractors that have been selected to carry out the project. Empirical experience should tell which is the case--or if the problems are a combination of more than one. When something innovative is being undertaken, it is quite likely that personnel will not have all the necessary skills. In this case the overall quality and willingness of the person, along with the extent of supportiveness of other project and related personnel, determines whether or not he will be able to attain the necessary new skills during the project.

Formative Processes: Improving the Project and Its Products

Allowing for Change

Recommendation 19: Permit the project to be formative in nature to the extent that improvements may be made along the way, as a result of experience.

The FRMS Project

Some FRMS planners felt if they made concrete plans too early, the funding agency might hold them to those plans, when it might be discovered later that a different procedure or task would be more functional.

If there had been a formalized original agreement, any necessary changes in the project could have been structured around that original consensus and be related to mutually agreed upon major milestones and deadlines. These milestones can then be evaluated, even though there has been some evolution during the project's course.

General Discussion

In an innovative project, the best of all possible initial thinking and planning may not be good enough to carry the project to completion. Glock (1961) states:

> "...One requirement for effective utilization of research is that the sponsoring organization have the flexibility to break with tradition and innovate new ideas. The action implications of social research are often radical in nature and no matter how sound they may be, most sponsors lack the courage to divorce themselves from traditional ways of doing things in favor of new and what often seem to be untested approaches. The factors which make for organizational flexibility in this regard are difficult to discern."

In an innovative project, experience may not be available to guide planning. Therefore, it is especially important to provide for change to take place through empirical processes.

Some research and management professionals call such a formative model the "action-research" model (French and Bell, 1973). Sashkin et al (1973) conclude "...that the action-research model provides the best basis for the effective attainment of adaptive change in social systems...because it seems to afford the greatest probability of adding to our knowledge about the change process and problems of change." These authors describe the action-research model as "...primarily a process model, in which...Data gathering, analysis, and diagnosis (research phases) lead to action planning and action implementation (action), the results of which are carefully evaluated (research). This evaluation provides data for further diagnosis and action. Thus a continuous cycle of research and action provides a general model for problem solving and change."

Whether an action model or a more formal model is used in experiments or demonstrations, any large-scale or long-duration effort needs provisions for flexibility. Only by such provision can the project take advantage of its accumulated experience.

Recommendation 20: If the project will involve communications (instruction, information, etc.) and communications media of any kind, to the extent possible, arrangements for kind, quality, management, and facilities for production and dissemination should be spelled out as part of the original planning consensus.

The FRMS Project

The FRMS Project had many delays associated with production, and a great deal of delay and trouble with production planning and staffing. The changes in the general fortunes of the FRMS Project were accompanied by many variations on the question of production. The issues might be outlined as follows:

1. Would there be new production or would existing programs be used? What quantity of each?

2. Was new production to be accomplished in-house or subcontracted? If subcontracted, would it be within the Rocky Mountain region or in some, possibly more sophisticated facility outside the region?

3. If any programming was to be developed by or originated live by FRMS staff, what kind of facility would be needed? Could the facility(ies) be found somewhere within the region?

4. If new studio facilities would be created, who would manage and staff them during the course of the Project? Who would own them after the Project was over?

5. Would the major up-link to the satellite be located in Denver? How would that affect the amount of equipment and kind of facility that might be needed for in-house production of programming?

The FRMS planners wanted to have as much control as possible over programming and facilities. Some FRMS staff members wished to do all programming in-house in newly-developed facilities, while others wished to subcontract with regional producers. Some wished for a combination of both. On the federal side, because of the large number of hours that FRMS aspired to produce, and because of negative recommendations made by federal consultants about potential FRMS production capabilities, the funding agency personnel were equivocal about what should be done and what should be funded. Several documents have previously been quoted that refer to the controversy over production, see, for example quotes from (72/07/07) p. 64 this report, and (73/04/19D) p. 53, this report.

General Discussion

Problems and questions about production and facilities are unique to each situation. If the arrangements can be spelled out and agreed upon early in the project, it is possible that any number of patterns of within-house/out-of-house production, staffing, and facilities can be made to work. All such arrangements depend, of course, on the competence of staff and the adqueacy of facilities, coupled with realistic time estimates for materials to be produced.

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In the Samoa project the early phases promised much success. The new Governor, Rex Lee,, was determined to overhaul the educational system of the island and provide a new instructional system, based on ETV, that would upgrade the skills of both the students and the resident teaching staff. Equipment was installed, personnel who were resistant to the use of television were "relieved of their duties, and their contracts were not renewed." (Schramm et al, 1967). The project had some difficulties with creating a library of programs that could be used from year to year. Two difficulties were found in actual practice: 1) the teaching and filming staff learned a considerable amount from each new experience; the result was that early efforts were not up to the critical standards of later efforts; and 2) some of the content tended to become out of date over the year's time (Governor Lee, personal communication, July 1972). It is interesting and consistent that when Governor Lee left American Samoa to become a member of the U.S. Federal Communications Commission, the educational project began to experience many problems connected with mismatches between operationalization and the original conception of the project.

Materials

Recommendation 21: Materials should be tried-out, revised, and refined so that they can meet some reasonable objectives before mass distribution.

The ERMS Project now has a small in-house production studio. Partly owing to the philosophy of the Project staff and partly because of the short time schedule, ERMS has not been able to pre-test materials or field procedures to any great extent.

Lack of pre-testing, usually accompanied by a lack of commitment to pre-testing, afflicts many projects. The team that visited American Sampa reports that they "...did not observe any systematic attempt to refine a television lesson to the point where its teaching effectiveness became predictable..." This flaw, which is present in many innovative projects, can interfere with useful research and clear evaluation.

Schedules

Recommendation 22: Adapt both daily and yearly scheduling of program delivery as well as of subject-matter content to suit real needs rather than traditional goals that have been imported from another educational system.

Recommendation 23: Before plans are made for any given group of participants, be certain that they understand and agree to any real scheduling constraints.

The FRMS Project

Scheduling was originally a major concern for the FRMS ETD Project. There is no universal schedule of hours for classes in the Region. Therefore, by normal scheduling, some classes might be meeting during the broadcast, while others would have a class break during the broadcast. Agreement would have to be obtained from schools participating in the career development programming that those classes would be scheduled at the time the satellite was to deliver the programs. Early childhood programming would have similar problems in scheduling to meet the needs of care-givers in institutional settings. However, many such institutions would not have as much trouble adapting to care-givers needs as would schools with the schedule of classes for career programming. In addition, at some point it would be necessary to find out which home audience looks at TV at what hours. A more serious difficulty with delivering the Early Childhood programming to homes was that a special antenna and signal conversion equipment are needed in order for a television set to receive and send satellite-mediated signals. Caretakers at home would either have to be part of an existing cable TV network, receive programs through participating public or private television stations, or have an antenna installed on their property. A thirty foot square of poured concrete was thought to be necessary for the installation at that time.

Most of the difficulties with audience participation and program scheduling remained unresolved at the time of the visit of the OE/NIE site visit team, 12 April 1973. Document (73/04/19D) says, for example, "However, the notion of delivering an audience, or having the audience deliver itself, up to 25 or 30 miles, at a time of day not of its own choosing, to view TV programming is a challenge to any research design, or the claim of meeting social needs." At the date of this writing, scheduling, even without the Early Childhood Component scheduling and audience problems, scheduling negotiations are still underway.

General Discussion

Flexibility and ability to make rational departures from tradition are particularly important to developing areas of the world. In American Samoa, for example, English was taught as a functional second language, yet the Samoan setting discourages its use. The visiting team recommended that the school adopt a year-around schedule, with the long vacation coming in the Samoan summer months (December and January). Some of the language programs that were being shown during the regular school year could then be shown during the long vacation. "...educators seem to agree that the Southern Hemisphere schedule (approximately February through

November) is better suited to Samoa than the normal U.S. mainland schedule. There is really no good reason, except the convenience and personal habits of Palagi personnel, why Samoan schools need to be on the same calendar as those on the mainland." (Nelson, 1970).

The flexibility recommended in this report assumes competent planning and staffing. We do not intend to recommend the sort of flexibility that happens with all live, spontaneous programming, nor do we recommend "flying by the seat of the pants."

Senior Management and Policy Participation

Recommendation 24: There is a need for strong support and leadership from senior policy and administration officials.

Recommendation 25: Whether or not their continued involvement is possible, it is important for policy planners to prepare clear statements of the intellectual foundation for planning, development, and implementation.

The FRMS Project

Policy level persons who participate in planning a project should remain directly involved with the development and implementation. The FRMS ETD had periods when federal policy makers were closely in contact with the project and others when they were not. The fortunes of the project reflect these different periods. Commencing on 1 July 1972, the authority and responsibility for the FRMS ETD became increasingly divided between DHEW, Office of Telecommunications Policy (which retained responsibility for broadcasting and engineering), and the National Center for Educational Technology (which became responsible for the major project activities). Splitting the authority and responsibilities for the project in this way had an unfortunate effect, since it prevented continued involvement of DHEW policy planners who had originally been associated with the major project activities and thus led to increased confusion about the original goals and objectives of the project. Whether or not the criticisms of the project by the operating agency were justified, the fortunes of the project were lowest during the periods when policy level people in DHEW were not involved with the major grant activities. It was, for example, difficult to obtain funds that on-site personnel believed had been committed to the project, and there were numerous requests to revise plans for projected activities. Nearly all federal communications between July 1972 and June 1973 reflect these requests.

The Project has strong political backing from the Rocky Mountain region, and a former state Governor was originally part-time Director for the Project. Owing somewhat to these considerations, the project continued to be funded in spite of its troubles in Washington.

As soon as DHEW policy people again became directly involved with the major grant activities, the fortunes of the project began to stabilize (73/06/01A). After that time nearly all of the existing project goals were reformulated, as well as the scope and purpose.

General Discussion

Leadership

While sound structures and personnel practices help assure the effective operation of a project, a strong leader may be able to oversome some defects in organization.

Strong leadership has contributed to the success of projects in American Samoa, Thailand, El Salvador, and Niger. Lack of strong support from the top has contributed many difficulties to projects in Nigeria, Colombia, and elsewhere (Schramm et al, 1967). A change in top level personnel adversely affected the project in American Samoa. This phenomenon led the visiting team that studied the Samoan experiment (Nelson, 1970) to conclude that a formal master plan might have made the system "...more secure from a changing political situation." In El Salvador (Mayo and Mayo, 1971) where an ETV Project was planned and implemented by the same group of persons, one of the early initiators of the project was also the Minister of Education. The ETV Project in El Salvador relied in large measure upon the financial resources and technical assistance rendered by USAID. However, the country also drew heavily upon its own resources and insisted upon a strong local control from the outset. The Minister of Education eventually became directly involved with the day to day problems and operations of the ETV Project. He was invested both with the project's authority and its accountability. This involvement resulted in some negative side effects: for example, subordinates came to rely overmuch on the Minister's judgment. Judging from the report, the overall contribution of strong leadership and centralization of planning and implementation eventually brought about a successful project.

Policy Foundation Documents

The foundation documents prepared by policy planners for grants and contracts should not be merely reflections on or reactions to reports and proposals; they should be clear statements of policy, criteria for execution, and the intellectual rationale for funding. If it seems desirable this can be done cooperatively with on-site planners, which should facilitate the establishment of communication patterns.

The optimum condition in negotiating research contracts exists when "...the interaction involves full and detailed discussion on these matters. However, this is singularly difficult to achieve (Glock, 1961). "These matters" include:

clarification of the practical objectives of research, establishment of a research design suited to the objectives, monitoring of the research while it is in progress, identification of the applied implications of the findings and, settlement of administrative and financial arrangements.

One practical reason for maintaining a cooperative decision making apparatus is that the policy and fiscal planners, government or private, may be unfamiliar with situational constraints at each site (Kotz, 1967). Additionally, funding agency staff may be ill-equipped to administer innovative programs. A joint clarification of the matters listed above may prevent problems.[8]

Finally, a clear policy-level intellectual structure is important because mismatches between policy, planning, and implementation do occur. For example, the evaluation team that visited the innovative educational system in American Samoa (Nelson, 1970) felt that it was impossible to meet goals that had been originally stated for the program, given the current operational system. For example, one of the goals stated near the time of beginning of the new system in 1964 was that students who did not plan to go on to college should be provided opportunities in manual skills, functional areas, and general knowledge. It was assumed that such opportunities would enable those students to contribute to a better economic and social structure. "...yet the program actually put into practice made no provision for specific vocational curricula until the final two years of high school..." (p. 49) Such mismatches between the policy and planning level and the on-site implementation are common. The likelihood of mismatches leads again to the conclusion that policy makers should lay out means for reaching goals in finer detail than they heretofore have been accustomed.

9. In a 1969 NCERD report, it is stated that "...particularly in respect to major innovations such as differentiated staffing or individualized instruction, [a problem arises] because it would appear that at present we do not possess the kinds of administrative and professional mechanisms required to diffuse and sustain radical research-based reformulations of instruction and education."

Continuing Relationships

Recommendation 26: As related by Recommendation 6, the funding agency should evaluate the progress of the grant or contract at regular periods. These evaluation sessions should cover four questions: 1) Was the work that was completed directed toward meeting the mutually agreed-upon goals and objectives of the project? 2) Is the work progressing on a reasonable time scale? 3) Are the costs of the project remaining within the mutually agreed-upon bounds? 5) Is the completed work of acceptable quality?

The FRMS Project

Project Monitoring

We have said many times before that much of the trouble the FRMS Project had with federal funding agencies stemmed from the lack of mutually agreed-upon goals and objectives. Although there were statements of intent from both Project and federal personnel, there was never an original agreement between them about any single aspect of the Project. Because of the strong political support for the Project in the Rocky Mountain region, both federal and Project people assumed that some kind of effort would be funded. Because the interest in the project at the federal level was variable (some personnel assuming large funding and large scale, others assuming moderate funding and small scale, and still others changing their minds about amount of funding and Project scale as time passed), different signals appeared to be sent to Project personnel by different federal personnel about the same or similar issues.

As a result both of changes in the federal structure (OE projects and personnel moving to NIE, for example), and of mismatches in concept and implementation between the federal contract monitoring agency and the on-site FRMS Project staff, the federal monitors in the Office of Education and in the National Institute of Education began to have an increasingly antagonistic position vis-a-vis the Project. Document (73/02/01) from the Project Office to the President of FRMS, says,

> "As we discussed with your staff, we believe that it will be beneficial to have third-party professional recommendations, before NCET makes a decision to allow the Federation to use project funds to create an in-house production facility.
>
> "We will also require written statements from each of the broadcast educational television stations in the eight state area that they cannot either singly or in combination produce, in a timely or adequate manner, the 104 hours of video materials that you are planning.

> There are at least five ETV stations in your area that have received grants under NCET's Educational Broadcasting Facilities Program and, according to their applications to us, plan either to produce programs for the satellite demonstration or to serve as a production center for the region.
>
> "The last item regards the pre-grant audit and cost analysis which [an employee] of OE's Contracts and Grants Division, mentioned when you visited with us on December 19, 1972. Before the audit can begin, there is certain information that our Contracts and Grants Division requires regarding your FY 1973 expenditures and their FY 1974 budget projections."

In the case of the FRMS project, it might have been helpful for the federal government to place a monitor or representative of the federal funding agency in residence with the project staff in Denver, to work as a cooperative member of the project. Some attempt to do this is probably indicated by the placement on site of an extra-agency funded evaluation team, intended to be a functional part of the project. The evaluation planning team, however, believed their mission to be cooperative with the Project's endeavors, not to provide on-site monitoring of the Project staff. This external position that was supposed to be internally helpful caused many disfunctional relationships to develop. Outside parties that become involved in a project probably should have a general, overall project interest and responsibility, and their role should be a part of the earliest planning consensus.

The amount of difficulty in operationalizing the intention that the extra-agency funded evaluation team for the ETD would be cooperative with the project probably indicates that the placement of a federal monitor cum protagonist on site might not have worked. However, with such a placement the power or authority structure would have been clear. With the outside evaluation planning team, the authority structure was intended to remain with the ETD project. The responsibility for many concrete tasks that had not been made part of any formal agreement between FRMS and the funding agency was, however, vested in the Stanford team. Consequently, the project personnel were never certain that the evaluation team did not represent a threat to the project's internal integrity, and the team was not fully effective in carrying out its contractual obligations.

Evaluation of Project Reports

Early progress reports--requested monthly--became confused with responses to federal requests to make changes in or explain aspects of the Proposals. Massive documents, approximately 300 pages each, were submitted from FRMS dated

25 June and 28 July. This activity involved the entire staff, and was itself the major "progress" between progress reports for a two to three month period.

Suggestions for Structuring Continuing Relationships

There are two main elements in this discussion. The first is the role of the project monitor and the second is the basis and procedures for periodic evaluation. A general set of suggestions for structuring continuing relationships is given here, including goals and objectives, time schedules, costs, quality or acceptability of products, and progress reports:

1) The funding agency should set up its projects so that the monitor can function as a project protagonist. The sometime funding agency posture of the contract monitor as an antagonist is most destructive. If the confidence of the funding agency is so low that the project monitor must take an antagonistic position, then the project should probably be renegotiated and structured so that the funding agency can again take a positive line.

2) As noted in the Personnel section of this paper, failures to meet milestones for goals and objectives can (omitting acts of God and war) occur either because of a deficiency in the conception of the project, a deficiency in the operationalization of the plans, or a deficiency in the personnel or subcontractors that have been selected to carry out the project.

3) In the case where the contractor or grantee does not have the complete confidence of the funding agency, then the scope of the project itself should be small, or should be staged with definite evaluational milestones occuring during early phases. Such projects should usually be funded on an explicit contract basis (although, of course, there are other reasons for funding by contract rather than by grant).

4) If the project is of sufficient duration and the funding agency begins to develop confidence in the contractors, a provision could be made for increasing the size, scope, or funding of the project, or for having fewer evaluational milestones.

5) If the funding agency does have complete confidence in the contractor or grantee, then there is no apparent reason that the ultimate responsibility for carrying out the work should not be with the contractor or grantee, with the funding agency in an assisting position.

6) In spite of the experience with the ERMS, it may be a good idea in some cases for the funding agency to place a representative on-site. This will work if the intention is to be cooperative, but will not work if the wish for an on-site monitor is a reflection of perceived incompetence within the project, since it would be impossible to be truly cooperative.

General Discussion

Project Monitor Function

Project monitors and others who conduct reviews should understand the policy basis for the project. They should be able to implement the policy and the operational planning, and they should be able to relate with policy people within the funding agency, with other agencies, and with the on-site project personnel. They should be free as much as possible from purely political pressures that may affect the project.

Evaluational Procedures

Evaluation of any project is necessary; otherwise the costs, causes, and effects of what happened will not be known and it will not be possible to avoid the bad and reproduce the good in future settings.

If the project, whether contract or grant funded, is to be evaluated in terms of how well its goals were met and within what level of funding, it should be evaluated on the basis of the terms, conditions, and methods of evaluation spelled out in the original consensus.

Evaluation of major milestones should be every month or every few months, depending upon the desires and convenience of all sides and the real needs of the project.[10] The most difficult activity may be assessing the quality of work. Milestones should, therefore, be stated so that product quality is part of the evaluation: this may require arbitration procedures. A milestone would, for example, not be acceptable simply because an allotted amount of staff effort or money had been spent. Planning for any given task or tasks should be accepted as complete only when criteria for accomplishment are clear and approval or disapproval is explicitly possible.

10. Formal progress reports should not be required more often than every 3 months, lest the activity of preparing progress reports take place of progress.

Even though funding should be firmly committed, it should be clear that if the milestones are not being met, some help will have to be obtained until they can be. If the project falls very far behind in meeting major milestones, some portions of the effort should be terminated and the project should be rescoped and renegotiated. Evaluation of major milestones does not have to take place as a part of a giant written progress report. Except when a product is being submitted, progress reports could be brief--from 3 to 10 pages, for example. The evaluation should be based on the original grant or contract document, and standards for evaluation should be clear and consistent for both the evaluator and the project staff.

Research and Evaluation

Recommendation 27: Whether funded from without or within, research and/or evaluation should be part of the original planning consensus for the project. Research and evaluation planners should be an integral part of the earliest planning efforts, even if an external summative evaluation is planned for the end of the project. Plans for either research or evaluation must be made from a position of enough authority that the responsibilities can be carried out.

The FRMS Project

Influences on the Evaluation Planning Effort

The extra-agency funded evaluation team from Stanford University was placed on-site with the FRMS ETD with the intention that the team would be a functional part of the ETD. This contract was funded through the Office of the Secretary of DHEW, but monitored through the Office of Program Planning and Evaluation in the Office of Education. Although the team completed their contract obligations, they did not accomplish all that they wished to. Part of the reason for this is that the funding and the team were perceived as external and not part of the project. The evaluation planning group was "forced" upon the project and must have seemed to be one more thing that the federal people decided to do to the project. This "outside" group was not part of whatever original understanding there was between the funding agency and the project personnel. Document (73/05/09A; from the Director of the National Institute of Education to the Secretary of HEW--marked DRAFT, the only copy available to us) says:

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> "...The role of the Stanford University evaluation team in helping to conduct a meaningful informative evaluation has not worked. The Stanford team, because its funding is from a separate contract and it has no clear support from FRMS management, has had minimal effect on the FRMS activity."

An additional factor that complicated the evaluation planning was that the federal agency staff were about to enter into an extensive reorganization, in which the Office of Education would be responsible for demonstrations and dissemination, while the newly-created National Institute for Education would be responsible for research and development. Some federal personnel wished to retain the budget for the relatively large FRMS project within OE. An internal OE memo (72/01/17), commenting on an early version of an FRMS proposal read, in part,

> "...anyone who reads it could not classify it as anything else but an attempt at research. As such, it would have to be transferred to NIE along with all other R&D functions. Therefore, I presume that it needs extensive restructuring on this basis alone... In terms of immediate action, I suggest that two or three highly experienced research specialists begin work immediately with OE and project staff in order to outline the possibilities and limitations. Their purpose would be to eliminate the "research" features of the present proposal and to specify both what can logically be demonstrated and what data can reasonably be gathered to evaluate the success of the demonstration."

This is a clear example of a mismatch in expectations between two funding agencies, since the NIE site visit team clearly expected a research plan for an experiment. In addition, the above quotation underlies the mismatch between the on-site project and the funding agencies in general, as evidenced by the fact that the project did, in fact, continue to attempt to plan research, in the face of the contract issued in May 1972 to an "outside" evaluation team, one originating purpose of which was to "...eliminate the 'research' features."

Late in 1972 the FRMS ETD was transferred from the Office of Education to the National Institute for Education. The project was automatically changed from being the (supposedly) "evaluated demonstration" for which planning had gone on for nearly the entire calendar year of 1972 to being a "research project". The site visiting team that was sent to evaluate the ETD in mid-April 1973 was understandably confused about the nature of the project. The ease with which it was generally

3. FRMS project personnel were never certain that the team did not represent a threat to the internal security of the project, vis-a-vis the federal funding agency, which was (rightly) perceived from time to time as antagonistic to the project.

4. The original management structure of the project was organized along areas of interest of four component directors, rather than along functional lines. Considerable investment went into protecting the independence of each component. Each content group, for example, wanted to have its own field service staff, to plan its own research and evaluation, and to be budgeted on a component basis, rather than on a basis of shared functions.

5. The evaluation team was intended to be cooperative with the project; however, considerable responsibility was vested in the team, without any but persuasive authority for having its ideas included. For example, the data-collection documentation that was prepared for the Demonstration was submitted as "draft," because the FRMS staff refused to have anything to do with it. The team was small, and there were no funds to engage in field data collection without FRMS staff cooperation. Therefore, no baseline measures, for example, were made.

6. A major charge of the outside group was to plan and help execute formative evaluation of the overall Demonstration, including the programs that were to be shown over the satellite system. Some progress was made by the content staff in preparing measurable program objectives and measurement instruments, but uncertainties about what content the programs were to have and who the audiences were to be, precluded the initiation of a thorough formative evaluation or action research effort throughout the period of the evaluation planning contract.

General Discussion

The issue of whether research and evaluation should be internal to the project or external has been considered by a number of authors. Lippitt (1961) says, "There are plenty of successful and unsuccessful examples of both. Different problems are created by each situation." He does not discuss having the research or evaluation imposed on a project from an outside agency, but says that when there is a mutually agreed-upon contract the relationship "...seems to result in a more effective influence situation, and a motivation by the organization to 'get their money's worth' by using the help that is provided." When the research

supposed that the project could change from demonstration to research illustrates a common misunderstanding of distinctions between research and evaluation.11

Whatever the causes, at the end of 1972 and early in 1973, there was a "too little and too late" effort to convert what had become a giant services demonstration, with some within-component research efforts, guarded from the interference of the outside evaluation team, into a rigorously designed research project. This change took place over a full year after the project had been funded and its much revised proposal conditionally accepted, and in spite of the fact that the contract for the evaluation team had been explicitly set up not to plan research. Needless to say, the effort to convert the Demonstration to research was not successful.

In the words of one of the NIE site visiting team (73/04/17): "There is a confusion among staff as to whether the project is primarily a demonstration (as it is officially named) and/or an experiment. Perhaps the two are not compatible as the project now shapes up."

Conclusions About the Evaluation Planning Effort

It is our conclusion that the external position of the evaluation team was not successful for several reasons:

1. The team was imposed on the project from the outside--an outside evaluation planning staff was not part of an original consensus about project goals and operations.

2. The team was caught between funding agency wishes that the project not do research (in the beginning), that it would do research (at the last), and FRMS wishes to have a large demonstration of a service delivery system that included "research" on all aspects of the system.

11. The NCERD (1961) report mentions a similar difficulty in assessing State and local educational activities as a result of an absence of agreed upon distinctions among research, development, experimentation, demonstration, and evaluation.

or evaluation resources are located inside, "...it is easier to be accepted as 'one of us.' But there often seems to be a problem of losing status as an expert resource."

Glock (1961) notes that it probably does not matter very much whether research is performed as an in-house activity or is contracted outside; it is most important that the policy maker and the research contract monitor understand one another: "Whatever arrangement is used, however, the kind of relationship which is established between the policy maker and the research 'monitor' has much to do with how useful any research activity turns out to be."

He also says that the research and evaluation group is less apt to compromise on standards and ethics when funded outside of the regular project activities: Furthermore, "administrative constraints are a constant threat to the maintenance of standards and the research organization may feel obliged to abandon or compromise its standards in order to avoid administrative difficulty. This may take the form of compromises in the sample design, ignoring mistakes in interviews and the like. The research organization's actual behavior, of course, is reflected in the quality, and ultimately the usefulness of its research."

Conclusions

Frequently in large projects there is conflict between the desire to undertake highly visible and potentially significant social demonstrations and the need to provide hard and systematic evidence on the results. Etzioni, of Columbia University, has written of the difficulty of engineering social systems. Unlike experiments in "hard" science, social experiments are not generally tested using models that provide for a series of expansions from a tight original experiment to concept; they are, rather, created full blown.

Thus it is inherently difficult to achieve a workable balance among political constraints, operational constraints, social constraints, and at the same time achieve the results planned or desired for major social demonstrations. The recommendations we present here will hopefully be of assistance to those planning social demonstration projects in the future.

Summary List of Recommendations

Recommendation 1: Before significant funds are expended, the Grantee and the funding agency must agree on the goals and objectives of the project, the procedures to be used, level of funding, developmental and implementational procedures, and methods for arbitrating differences of opinion that may develop during the project.

Recommendation 2: To the extent possible, the grant or contract documents should reflect the initial expectations of all individual and organizational parties involved in the grant negotiations.

Recommendation 3: In order to maintain support, project staff must be able to demonstrate that ideas are clear, that the undertaking is financially possible in a fixed time frame, and that the results will contribute to the solution of the problem for which the project was conceived.

Recommendation 4: The grant or contract documents should reflect agreement between the policy and operational levels of the funding agency, both of which should be involved in the ongoing monitoring and operation of the project.

Recommendation 5: Once goals and objectives are agreed upon between agency and project, the original grant or contract agreement should make certain that projects are sustained long enough to insure "...that the program as a whole does not suffer from the pressures on all discretionary programs to shift foci to reflect the apparent priorities of the moment." (NCERD, 1969)

Recommendation 6: Government sponsored projects (and others similar) would ideally be funded on a project basis, based on a well articulated, mutually agreed-upon proposal or work statement. Major milestone objectives would be set for review at reasonable times. Multiyear projects could operate under these criteria, with an overall general project review being scheduled to take place once each year.

Recommendation 7: Overall planning, fund negotiations, "needs" surveys, and operationalization of policy should be completed by a small team composed of applicant agency personnel, ideally with the support and assistance of policymakers or funding agency personnel as well.

Recommendation 8: All early steps should be complete before a large effort is launched, numerous staff hired, or large amounts of funding committed.

Recommendation 8: All early steps should be complete before a large effort is launched, numerous staff hired, or large amounts of funding committed.

Recommendation 9: Avoid having a commitment to planning act as a psychological lever, preventing progress that could take place, by too rigidly defining which are properly "planning" tasks and which are not.

Recommendation 10: Any attempt to incorporate the ideas of the "population as a whole" or of any interest groups ("needs surveys," e.g.) should be initiated during the preplanning stages of the project.

Recommendation 11: As early as possible, research planners should be involved with setting objectives. They should create measurement instruments, make certain that procedures, samples, and field procedures will meet research, project, and evaluation objectives.

Recommendation 12: Detailed project-wide objectives consistent with grant agreements should be written. Objectives should be defined for field procedures, hardware and software, and management, as well as for programs and for instructional, or "treatment" variables.

Recommendation 13: An attempt should be made to spell out programming or instructional, or "treatment" objectives in very fine detail, and to develop measurement instruments in coordination with setting objectives as one of the first steps in planning, to be taken in parallel with such activities as milestone charting, budgeting, and initial contacts with cooperating or relating agencies.

Recommendation 14: Make baseline measures of pre-project conditions. Such measures provide information that is too important to overlook.

Recommendation 15: Obtain personnel of the highest quality. An already-established team can often function more efficiently than a newly-made team, and the schedule of the project should dictate to a certain extent whether or not it is reasonable to start up an entirely new team effort within the time available.

Recommendation 16: Obtain a strong project director or strong co-directing team. Strong, cooperative leadership is almost certainly essential to success.

Recommendation 17: Obtain personnel (especially those in high level or otherwise critical positions) who will commit themselves to serve overall project goals, not to develop within-project "factions", and to forsake personal commitments to "pet ideas," until project goals have been achieved.

Recommendation 18: Especially in developing nations and regions, it will usually better serve the nationalistic purposes, as well as the more altruistic purposes of upgrading the national or regional capability, to choose as project director a professional from among the citizens of that region or country. If the on-site officials or the funding agency feel that the region is lacking in qualified professionals, possibly a co-directorship could be arranged with the best qualified native professional being supported by a qualified professional from a different region or nationality.

Recommendation 19: Permit the project to be formative in nature to the extent that improvements may be made along the way, as a result of experience.

Recommendation 20: If the project will involve communications (instruction, information, etc.) and communications media of any kind, to the extent possible, arrangements for kind, quality, management, and facilities for production and dissemination should be spelled out as part of the original planning consensus.

Recommendation 21: Materials should be tried-out, revised, and refined so that they can meet some reasonable objectives before mass distribution.

Recommendation 22: Adapt both daily and yearly scheduling of program delivery as well as of subject-matter content to suit real needs rather than traditional goals that have been imported from another educational system.

Recommendation 23: Before plans are made for any given group of participants, be certain that they understand and agree to any real scheduling constraints.

Recommendation 24: There is a need for strong support and leadership from senior policy and administration officials.

Recommendation 25: Whether or not their continued involvement is possible, it is important for policy planners to prepare clear statements of the intellectual foundation for planning, development, and implementation.

Recommendation 26: As related by Recommendation 6, the funding agency should evaluate the progress of the grant or contract at regular periods. These evaluation sessions should cover four questions: 1) Was the work that was completed directed toward meeting the mutually agreed-upon goals and objectives of the project? 2) Is the work progressing on a reasonable time scale? 3) Are the costs of the project remaining within the mutually agreed-upon bounds? 5) Is the completed work of acceptable quality?

Recommendation 27: Whether funded from without or within, research and/or evaluation should be part of the original planning consensus for the project. Research and evaluation planners should be an integral part of the earliest planning efforts, even if an external summative evaluation is planned for the end of the project. Plans for either research or evaluation must be made from a position of enough authority that the responsibilities can be carried out.

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(72/05/31) ETD Early Childhood Component. Agenda and Participant List. Conference in Reno, Nevada to address regional and state issues in early childhood development.

(72/06/01) From Secretary, DHEW. Memorandum. To the President. Memo about HEW contracting "...for a planning study of the educational and health care services potential of communication satellites."

(72/06/05) NASA Satellite Review Meeting. Notes.

(72/06/15A) FRMS ETD. Progress to Date. Section of early draft of a report and proposal.

(72/06/15B) Associate Director, Office of Research and Development, U.S. Department of Labor. Letter. To President and Project Director of the Federation of Rocky Mountain States. Approval of Grant to FRMS in support of proposal entitled, "ETD", dated May 23, 1973.

(72/06/23) From Acting Associate Deputy Commissioner for Renewal, DHEW/OE. Letter. To President of FRMS. Confirm conversation with Commissioner as to support of Rocky Mountain Educational Technology Demonstration during initial months of fiscal year 1973.

(72/07/05A) Stanford Field Team Member (DMarkle). Notes. NASA/HEW/CPB Satellite Review Meeting.

(72/07/05B) From Co-Monitor of the ETD, through Acting Associate Commissioner, NCET. Memorandum. To Associate Commissioner of Educational Technology, USOE. Critique of FRMS Technology Demonstration Report.

(72/07/06A) FRMS Utilization Component. Paper. "Implementation Plan for Prototype Sites."

(72/07/06B) Stanford Field Team Member (DMarkle). Summary of second morning of NASA Review Meeting, 6 July 1972, at NASA offices in Washington, D.C.

(72/07/07) From Acting Associate Commissioner, NCET. Letter. To President of FRMS. Initial reactions to draft dated 25 June 1972, FRMS ETD Report and Proposal.

(72/07/07B) From Acting Associate Commissioner, NCET. General Comments. Enclosure to Letter of 72/07/07. To President of FRMS. Comments to draft 25 June 1972, FRMS ETD Report and Proposal.

(72/07/08) Stanford Field Team Member (Hall) Notes. FRMS Prototype operation and field organization.

(72/07/28) From Acting Deputy Director DTD, DHEW/OE. Memo To Acting Associate Commissioner, NCET. RE: 28 July 1972 FRMS submission.

(72/07/28A) Federation of Rocky Mountain States. 28 July 1972 Report and Proposal. To DHEW/OE, NCET.

(72/07/28C) From Acting Associate Commissioner, NCET. Memorandum. To Contracts and Grants Division, through FRMS Contract Officer DHEW/OE. Concerning continuation of Grant OEG-0-72-0904.

(72/07/31) Stanford Field Team Member (Hall). Notes. General progress reports and prototype site selection.

(72/08/01) FRMS ETD Memo. Names Early Childhood Design Group.

(72/08/07B) Assistant Project Director. Memorandum. To all FRMS Staff. Arrangements for the Early Childhood Design Group.

(72/08/07C) From ETD Project Director. Memorandum. Expenditures during Project year.

(72/08/07D) From a Field Reader of FRMS July 1972 Report and Proposal. Comments. To DHEW/OE FRMS Project Officer.

(72/08/08A) Stanford Field Team Member (Hall) Notes. ETD staff meeting on administrative reorganization.

(72/08/22) From Acting Director, DTD. Memorandum. To Acting Associate Commissioner, NCET. Review of the FRMS Report and Proposal of July 28, 1972.

(72/08/23) Staff Member, FRMS Utilization Component. Minutes. Early Childhood Design Group Meeting.

(72/08/23B) From Acting Deputy Director, DTD. Memorandum. To Acting Associate Commissioner, NCET. Comment: Final Report and Continuation Proposal, FRMS ETD, 28 July 1972.

(72/08/25B) Stanford Field Team Member (Hall). Notes. Meeting between ETD Engineering Component and NASA.

(72/08/25C) From Staff Member, Office of Program Planning and Evaluation. Letter. To Acting Associate Commissioner, NCET and a staff member, NCET. Re: ETD Report and Proposal, 28 July 1972).

(72/09/05) Olympus Research Corporation (ORC). Subcontract. With FRMS to "Survey and Evaluate Job Training Media and Curricula and Develop Media Approaches for Use with The Rocky Mountain Satellite Experiment Demonstration.

(72/09/14A) Stanford Field Team Member Notes. Conversation with Associate Director FRMS Broadcasting and Engineering Component. NASA Briefing to total ETD Staff on NASA deadlines and requirements.

(72/09/25) Director, Utilization Component. Memo. Re: State visits to Utah, Montana, Arizona.

(72/09/28) Director, Utilization Component. Memo. To FRMS Project Staff. State Visitation to New Mexico on September 25-26, 1972.

(72/10/02) From FRMS ETD. Addendum to FRMS Report and Proposal. To Project Officer DHEW/OE, NCET.

(72/10/04A) Stanford Field Team Member (Hall). Notes. Early History of ETD.

(72/10/05) Stanford Field Team Member (Hall). Notes. Site and State Coordinator selection and evaluation research and public information.

(72/10/11) Stanford Field Team Member (Hall). Notes. Broadcast and Engineering activities, January-July 1972.

(72/10/13) Stanford Field Team Member (Hall) Notes. Production Component activities.

(72/10/16) Director, Utilization Component. Memorandum. Concerning State Visit to Idaho.

(72/10/20) From Staff Member DHEW/OE, NCET. Memo to Acting Director DPD, DHEW/OE. Summary comments on October 5 FRMS submission.

(72/10/22) From Field Reader. Memorandum. Comments on 5 October 1972 FRMS Proposal.

(72/10/25B) Stanford Field Team Member (Hall). Notes. State Coordinator's Training Meeting.

(72/10/26A,B,E,F) Stanford Field Team Member (Hall). Notes State Coordinator's Training Meeting, perceived needs assessment, site selection.

(72/10/27A) Stanford Field Team Member (Hall). Notes. Roles of State Coordinators and State Content Liasons and current information policy.

(72/10/30) Stanford Field Team Member (Hall). Notes. General overview of project funding and review of significant current and pending ETD activities.

(72/10/31) From President, FRMS. Letter. To Acting Associate Commissioner NCET, DHEW/OE.

(72/11/16) Stanford Field Team Member (Hall). Notes. ETD history.

(72/11/17B) FRMS Management System Staff member. Paper. "Demonstration Management System."

(72/11/20) Stanford Field Team Staff Member (Hall). Notes. FRMS ETD funding.

(72/11/22) From Assistant Project Director. Memorandum. To all FRMS Staff. Director of Production and Director of Research have been hired.

(72/11/26) FRMS Management System Staff member. Paper. State coordinator's training meeting.

(72/11/30) Stanford Field Team Staff Member (Hall). Notes. Interview with FRMS Assistant Project Director.

(72/12/04,04A) Stanford Field Team Staff Member (Hall). Notes. Current ETD status.

(72/12/04B) FRMS. Notes. PERT review meeting.

(72/12/15B) From ETD Co-Monitor. Memorandum. To FRMS Management. 6-7 December FRMS Site Visit: Amplifying Addendum to Letter to Project Officer.

(72/12/18) From Director, DTD. Letter. To President of FRMS. Discussing changes to be made after visit from ETD Project Co-Monitor and Director, DTD.

(72/12/26) From FRMS Director of Production Component. Memo. To Assistant Project Director. Production of programming material.

(73/01/08) From Director, DTD. Letter. To President of FRMS. Discussing changes in FRMS ETD Project.

(73/01/19A) Stanford Field Team Member (NMarkle). Interim Report. "General History and Analysis of the Planning Phase of the FRMS ETD." To Contract Monitor, DHEW/OE, OPPE.

(73/01/19B) Stanford Field Team Member (Hall). Interim Report. "Historical Record of the Planning Phase of the FRMS ETD." To Contract Monitor, DHEW/OE, OPPE.

(73/01/26, 26A) FRMS Minutes. Subtask Monitor Meeting.

(73/02/01) From Director, DTD. Letter. To President, Federation of Rocky Mountain States. Comments about FRMS response to 18 December, 1972 letter from Director, DTD.

(73/02/26A) From Education Program Specialist, Career Education Task Force. Letter. To Director Career Development Component, FRMS. Questions about scripting for production, staff, revised statement of objectives, and analysis of early data.

(73/02/27) From Grants Officer, OE's Contract and Grants Division; Director, DTD; Program Specialist, HEW. Letter. To President of FRMS. Letter requesting changes in scope of ETD Project.

(73/03/21A) FRMS Subtask Monitor's Meeting. Notes. ETD status.

(73/04/06) From Grants Officer, OE's Contracts and Grants Division; Director, DTD; Program Specialist and Co-Project Officer. Letter. To President, FRMS. Letter requesting a response to 27 February letter instead of alternative plan as suggested in letter from FRMS dated 29 March.

(73/04/15) Staff Member, NIE, Site Team Visitor. Report. "Review of the Rocky Mountain Satellite Project."

(73/04/16) Member, NIE Site Team. Report. "Report on FRMS Site Visit."

(73/04/17) Member, NIE Site Team. Report. "Summary Comments FRMS Educational Technology Demonstration Site Visit, April 11-13, Denver, Colorado."

(73/04/18A) Member, NIE Site Team. Memorandum. To Chairman NIE Site Visit Team. Re: Federation of Rocky Mountain States' Education Technology Demonstration.

(73/04/19A) Member, NIE Site Team. Memorandum. To Chairman NIE Site Visit Team. Re: FRMS ETD.

(73/04/19B) Member, NIE Site Team. Report. "Review and Evaluation Site Visit, FRMS ETD, Denver, Colorado. April 11-13, 1973.

(73/04/19D) Chairman NIE Site Visit Team. Memorandum. To Director, DTD. Concerning Summary panel review of FRMS ETD.

(73/04/20A) From NIE Team Member. Memorandum. To Chairman NIE Site Visit Team. Re: FRMS ETD.

(73/04/20B) NIE Site Team Member. Report. "Review and Evaluation FRMS ETD."

(73/04/23) From NIE Site Team Member. Memorandum. To Chairman, Site Visit Team. Re: Evaluation of ETD Project, FRMS.

(73/04/24) From Director, Division of Technology Development. Memo. To Associate Commissioner for Educational Technology. Restructuring of the Educational Technology Demonstration Project.

(73/04/25) From Assistant in Management FRMS. Memo. To FRMS Directors, Associate Directors, Subtask Monitors, ECS Director of Financial Services, Assistant Project Director, and Designer of Management System. Monitors meeting, 25 April, 1973.

(73/05/03) From ETD Project Co-Monitor. Memorandum. To Associate Commissioner of Educational Technology, USOE and Director, DTD. FRMS Correspondence file with Time Life and NBC Enterprises.

(73/05/09A) From Director, National Institute of Education. Draft Memo. To Secretary, DHEW. Restructuring of FRMS ETD.

(73/05/21) From Assistant Project Director, FRMS. Memo. announcing appointment of full-time Project-Director and resignation of the Assistant Project Director.

(73/06/01A) From Director, DTD; through Associate Commissioner for Educational Technology. Memorandum. To Deputy Director for the National Institute of Education. Recent developments on renegotiation of FRMS Contract.

(73/06/01B) From Director, DTD. Memorandum. To Group Director, Technological Innovation in Education and Director, Office of Telecommunications, DHEW. Concerning conversation with new FRMS Project Director.

(73/08/noday) FRMS Satellite Technology FY 1974 Proposal.

APPENDIX

Federation of Rocky Mountain States, Inc.

Suite 300B / 2480 W. 26th Ave., Diamond Hill / Denver, Colorado 80211 / Phone (303) 458-8000

EDUCATIONAL TECHNOLOGY DEMONSTRATION

M E M O R A N D U M

TO: Nancy Markel

FROM: Ken Lokey

SUBJECT: Historical Record of the ETD

DATE: August 7, 1973

Nancy, I have two concerns relative to your request:

1. You mention that you now have a listing of significant decisions and documents. Are these incomplete since a particular date and is it from that date to the present a period you would like to have additional information about?

2. If you are not concerned with a particular time period, I am afraid your request is not a simple data retrieval task at this time. I could possibly assist your contractual effort in this case if I knew what your historical record now represents, i.e. on an exception basis and primarily for the period of time that I have been in my present position.

I will be glad to provide you with assistance if you can clarify the scope of your request relative to the concerns above.

K. L.

KL:cr

Federation of Rocky Mountain States, Inc.

EDUCATIONAL TECHNOLOGY EXPERIMENT

August 16, 1973

M E M O R A N D U M

TO: Nancy Markle

FROM: Tom Maglaras

SUBJECT: Historical account of the ETD

Listed below are some general items which may be relevant for your historical account of the ETD. As soon as we receive the list of documents which you now have on file, we will review it, add any documents that would be of assistance for the historical record, and delete those which we feel are no longer relevant. Members of our staff would be happy to discuss any of these items with you for clarification and elaboration.

1. Communications with personnel in the field. When individuals are placed in the field with a dual responsibility -- to the ETD and to the sponsoring agency -- it is vital that communications to these individuals and to the sponsoring agency be through a clearly-defined specific channel. In this case, we had a field team that was responsible to different components. These individuals received instructions from various sources at the regional level. This often times led to confusion and, in some cases, contradictory information was relayed to the field. Any project contemplating an extensive field organization which is dependent on cooperative relationships with a sponsoring agency, should guarantee firm lines of authority and communication with these personnel. In addition, relationships with the field should be handled in a consistent and well coordinated manner.

2. The field organization was put in place on the basis of "solid" information which later turned out to be inaccurate. As a consequence, a field organization was in place but did not have specific tasks to accomplish because of the lack of hard data and firm commitments from federal agencies. The major point here is that moves into state and local levels should be based on firm commitments from the funding agency.

3. Project activities in the field were by their very nature long-range commitments. Unfortunately, the commitments from Washington were either fuzzy or short-range. As a consequence, the retrenchment that was forced upon the project created credibility problems for the entire project in the field.

4. We were often in an "emergency information mode" in that we were responding to numerous requests from federal agencies that were based on telephone conversations. We often compiled data only to be called upon shortly thereafter to submit it in slightly different format. Information requests from any source, including federal funding agencies, should be received in written format, delineating the specific information requested and the uses for which this information is needed.

5. The project had an early and strong commitment to user input. However, the term was not used in a specific context. Our effectiveness in working with state and local agencies would have been enhanced had we been able to adequately define "user input," the extent to which we intended to use it, how we would use it, etc. User input was a wide open field with few constraints in its definition.

6. A project of this nature needs a clearly-defined decision making process and channel, especially to handle concerns, requests, needs, etc., that emanate from the field. The lack of such a mechanism leads to faulty, inadequate, conflicting communication, and loss of confidence in the data that is received by field personnel. This creates a monumental problem both for the internal staff and the field staff. In addition, such a decision making mechanism would expedite the work of individuals and of the entire project by establishing expectations and guidelines for the activities of all personnel.

7. Site selection procedures which were initially implemented worked quite well because states and local sites were involved in discussions regarding the project. In addition, it provided for the nomination of several sites above the number we anticipated to select. This gave field personnel choices from which to make their final selection. However, the overall site selection process suffered from the lack of a research design which was to have furnished the guidelines for the final site selection. Moreover, subsequent decisions at the federal level dictated that the sites would be limited in number, would be non-redundant, and would be rural isolated. As a consequence, a well-conceived, effective site selection procedure was negated because of these final factors in site selection. Also, these changes not only interferred with the actual selection process, but their earlier identification would have led to different types of site nominations.

8. It is important that activities involving such a project and state and local agencies be done with the advice and input of legal counsel. This project has wisely adopted this policy, and followed it throughout.

9. A basic approach in dealing with our sponsoring agency in each state has been one of mutual support and goodwill. This posture has been of benefit to the project, especially during the critical phase when the state teams were reduced from three to one.

10. Personnel actions should involve a clear understanding of the developmental nature of the Project and its impact on hiring and phasing in personnel. When personnel occupy positions, they should assume clearly-defined tasks and responsibilities and bring to their position an understanding of the external agencies with whom they must work.

TM:W